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ORIGINAL COMMUNICATIONS.

CONGENITAL CATARACT MISTAKEN FOR MYOPIA AND AMBLYOPIA.

By W. WHITE COOPER, Esq., F.R.C.S., Senior Surgeon to the North London Infirmary for Diseases of the Eye.

FROM the circumstance of three instances having fallen under my notice, in which Congenital Cataract had been mistaken for myopia, and two in which it had been regarded as imperfect sensibility of the retina, it would appear, that such errors are more common than is suspected. The publication of the following may, perhaps, assist the diagnosis of some similar cases, and thus prevent reproach from being cast on the surgeon consulted.

CASE I. Margaret Hay, a delicate girl, 15 years of age, was brought to me on the 15th of March 1847, for supposed amblyopia. Her mother stated, that her attention was first drawn to her daughter's sight, when she was about five years of age, in consequence of the great difficulty experienced in teaching her to read. For some time, it was considered to be stupidity on her part, and she was frequently punished; but at length, it became evident, that her sight was imperfect. An oculist was consulted, who, it would seem, made but a superficial examination of the eyes, and pronounced the case to be dulness of the retina, expressing his opinion that she would "grow out of it" in time. No improvement had, however, taken place up to the period of my seeing her. On placing a book with moderate sized type in her hand, she held it rather obliquely, about four inches from her eyes, and slowly spelt the words. Beyond the distance of four feet, she could merely discern the outline of a face, and her ideas of colour were very imperfect. There was nothing unnatural in the general aspect of the eyes; but, on close examination, there was an absence of that blackness of the pupil, so characteristic of a perfectly healthy eye. The irides were very active, and the pupils contracted strongly under light. A drop of atropine was placed in each eye; in about ten minutes, full dilatation of the pupils had taken place, and displayed two greyish semitransparent lenticular Cataracts, not filling the dilated pupils, but

permitting circles of choroid to be seen around the margins of the lenses. There was immediate improvement in the sight; large objects were seen with distinctness, and colours with new brilliancy, but small objects were still confused.

On the 20th March, I operated on the right eye, passing a cutting needle through the margin of the cornea, and slicing up the lens into small fragments, which were passed into the anterior chamber; the eye was carefully protected from the light, and the ordinary treatment adopted. At the expiration of five months, all traces of the Cataract had disappeared. The left eye was operated on early in August 1847, and no unpleasant symptoms followed. In this eye, a small fragment of capsule floated in the pupil, for some weeks after the lens had disappeared, but it eventually shrank; and when I last saw the patient, in September 1848, she enjoyed most excellent vision with both eyes, by the aid of glasses, which, however, she was desired to use as little as possible.

CASE II. Joseph Unwin, aged 23, had suffered, from infancy, from imperfect vision, which was referred to partial amaurosis, the result of irritation from teething. He had learned to read large characters with difficulty, and wrote a great school-boy hand. He had tried a variety of spectacles, without deriving assistance; vision was best in the gloom of twilight, and worst on a bright day. He consulted me on the 15th June, 1847. On examination, the globes and irides were found perfectly healthy, but there was the grey hue of the pupil, which suggested at once the nature of the case; and the full dilatation of the pupils, by atropine, brought into view Cataracts very similar to those described in the preceding case. On the 26th of June, the left eye was operated on by solution; it did well, and the patient left town on the tenth day after the operation. By the 14th of September, two-thirds of the fragments of the lens had been absorbed, and the eye had recovered considerable vision. On the 16th, the right eye was operated on, and its subsequent progress was equally satisfactory with that of the former. By March 1848, the left eye had perfectly recovered, and there was no vestige of Cataract remaining; a small fragment still lay at the bottom of the anterior chamber of the right eye. He was supplied with proper glasses, with strict injunctions as to their guarded use; and, with their assistance, seemed to have acquired a new sense, so great was the improvement in his power of sight.

CASE III. H. T. B., Esq., æt. 19, consulted me in January 1848. He stated, that, since birth, vision had been very indistinct; that three years previously, he had consulted an eminent oculist, who stated that nothing could be done for him, but that he must put up with his indifferent sight, and wear 28-inch presbyopic glasses, which enabled him to read, though with difficulty. On examining the eyes attentively, a greyish hue of the pupil was perceived; and, on dilatation with atropine, greyish semitransparent Cataracts were seen, the opacity being more dense around the circumference than in the centre. Vision was not improved, but rendered more indistinct by the dilatation. An operation was recommended; and, after the sanction of two other gentlemen had been obtained, I operated on the left eye on June 20th. The lens was freely cut up with a broad needle; the case did perfectly well, and, on the 28th June,

he returned home. On the 4th August, about half the fragments had disappeared, and the upper part of the pupil was clear. On the 25th September, the Cataract had quite disappeared, and, with a proper glass, he could read the smallest print at two feet distance. On that day I operated on the right eye, which did perfectly well until the 2nd of October; when, by imprudently exposing himself to a current of air, he took cold, and was attacked during the night with severe pain in the eye and orbit, and scalding lachrymation. On the following day, a red zone was visible around the cornea, and there was great intolerance of light. Four leeches were applied, with fomentations, and he was ordered a grain of blue pill, with hyoscyamus, every hour. On the 4th, the mercurial influence became apparent, and the eye was speedily free from pain. By the 8th, all symptoms of inflammation had disappeared, but there were two small adhesions, giving the pupil, when dilated, a sort of hour-glass form. On the 12th he left town. The case continued to progress favourably; and on the 20th January 1849, he could read exceedingly well with the eye, although there was a fragment of opaque capsule rather obstructing the pupil. Since that date I have not seen him, as he is pursuing his studies at the University of Cambridge, but have been informed that the capsule is gradually shrinking.

CASE IV. Edward Thomas, aged 19, was brought to me in May 1848, supposed to be suffering from myopia. As he entered the room, he advanced cautiously, frowning, and shading his eyes with his hand. He was the son of a Suffolk farmer; and from infancy had been supposed to be very near-sighted. An optician had supplied him with several pairs of glasses; but none improved his sight. On a book being placed in his hand, he turned his back to the light, and holding the page about three inches from his eyes, slowly spelt out words in large type. Features could not be discerned. In this case, also, the grey pupils indicated Cataracts, which were brought to light by atropine. On the 15th of May, the right eye was operated on; the lens being freely divided. On the third day, slight inflammation followed, but was subdued by leeches, fomentations, and cooling medicine; and, at the expiration of three weeks, the patient returned home. The fragments of the Cataract had almost wholly disappeared by September, when a similar operation was performed on the left eye. No inflammation followed, and the patient was able to return home at the end of a fortnight. After the lapse of ten months from the date of the first operation, the patient had regained considerable power of vision with the right eye, unassisted by glasses, which he had used sparingly. The left eye was making most favourable progress, at the date of the last report.

CASE V is related in my work, *Practical Remarks on Near-Sight, &c.* It is unnecessary to quote it at length, as, in all its essential features, it resembled Case III: there being one point of difference, however,—that the sight of the patient (a gentleman thirty years of age), was greatly improved when the pupils were fully dilated.

REMARKS. The amount of turbidity of the crystalline lens in Congenital Cataract, may vary in degree, from the colour of milk and water, to the faintest haze. In the latter case, the capsule is clear; but the opacity

involves the whole substance of the lens, minute spots being sometimes scattered over the surface. Unless the pupils be dilated, it is extremely difficult to recognize the true nature of such cases; but when the iris is under the influence of belladonna, the semitransparent Cataracts will be seen suspended, as it were, in the pupil. This appearance arises from the Cataract being less than the natural lens, and a clear space thus existing between its margin and that of the pupil, which permits the jet-black choroid to be seen beyond it. When a young person has dull vision, is unable to see distant objects, reads slowly, letter by letter or word by word, and is unable to continue reading beyond a short time, holds the book very near the eyes, and turns the back to the light, haziness of the crystalline lens may be suspected. A rolling of the head from side to side, and cautiousness of gait, are peculiarities very characteristic of these cases. Such patients find a difficulty in describing the amount of imperfection of their sight; for, clearness of vision being comparative, a person, who has never seen otherwise than obscurely, is unable to judge of the perfection of sight possessed by others, and can only describe his sensation, according to the standard formed by his own perceptions. The appreciation of colours affords an illustration of this; for the more delicate shades are invisible to such patients, and are seen by them with astonishment after the pupil has been dilated, or after the lenses have been absorbed. Myopia is the affection, with which such a condition of lens is most likely to be confounded; but the distinction will be made apparent by trying the patient with concave glasses, which, in Cataract, render the vision worse instead of better. In extreme cases of myopia, the pupils are generally large; whereas, in all the cases of Congenital Cataract seen by me, the pupils have been remarkably active, and contracted to a very small size. If doubt exist, dilatation with atropine will at once display the true nature of the case.

In treating the description of Cataract under consideration, we have choice of *two operations*.

The first and simpler, is that of making a small opening in the capsule of the lens, so as to expose that body to the influence of the aqueous humour without disturbing it. The lens becomes opaque in from fifteen to thirty-six hours, and gradually undergoes absorption; but so slowly, that a second, or even a third operation may be required. I have seen the lens barely reduced one half, at the expiration of six months after the operation; and it must be borne in mind, that the complete opacity of the lens, caused by the aqueous humour, renders the eye useless for a considerable time.

The second operation is that of freely cutting up the lens with a broad needle: this proceeding is more severe than the former, but of the two I prefer it, as materially shortening the duration of the cure. If carefully and effectually done, a second operation is seldom required. It is desirable to cut the lens into the smallest pieces possible, as they will then be quickly absorbed. The consistence of such Cataracts is about that of firm jelly; and, by dexterous manipulation, the process of division can be accomplished with comparatively but little violence to the eye. It is important that the pupil should be kept under the influence of belladonna, for some weeks after the operation, as the risk of adhesions (should a slight amount of iritis supervene), will be greatly diminished

by so doing. If the patient be brought, by careful management, into a fit state before the operation, and due care be taken afterwards, but little trouble may be anticipated. There are, however, two conditions in which the first operation is to be preferred; viz., in persons who have suffered from any inflammation of the sclerotic or iris, and in those who are constitutionally prone to inflammation of a rheumatic character.

It is to be remarked, that there are some cases in which an operation is not necessary,—that is, when the central portion only of the lens is affected, the remainder being transparent. Dilatation with belladonna here affords such assistance, that an operation is not required; and, fortunately for such persons, the effect of the belladonna does not decrease by use. Mr. Tyrrell mentions a case, where it was employed with full effect for ten years, and another, in which constant use for eighteen years did not impair its efficacy.

In cases where an operation is indicated, the earlier in life it can be performed, the better: the younger the patient, the greater is the power possessed by nature, of repairing the imperfection of vision caused by the absence of the lens. Glasses should be used as little as possible; and, even in adults, the amount of accommodation to distance and perfection of vision acquired is truly surprising, if they will have the resolution to abstain from the luxury of glasses.

To prevent confusion of vision when the return of sight commences, an opaque glass may be worn before the eye, on which the operation has been performed. When the vision has so far returned, that the individual can find his way about without difficulty, and can discern objects of a moderate size, the second eye may be submitted to operation. It is proper to warn the patient, that the sight will be rendered worse by the operation, and will continue so until absorption have made some progress. The opaque fragments of the lens block up the pupil; and if they be not prepared for this, alarm is likely to be excited in the minds of the patient and his friends. In from four to six months, the Cataracts may be expected to become entirely absorbed; it may happen that portions of opaque capsule obstruct the pupil, but it is not desirable to be in haste to interfere with these by operation, as they will often shrink, by their own contractility, out of the way.

In conclusion, I may mention two interesting facts, connected with the hereditary character of Cataract. His late Royal Highness the Duke of Sussex informed me, that Cataract was brought into the present royal family, by the marriage of one of his ancestors with a princess of Saxe Coburg Gotha. She became blind from Cataract, and the following members of the royal family have since been afflicted with that disease; the Duke of Cumberland (of Culloden celebrity), George the Third, George the Fourth, the Duke of Gloucester, the Duke of Sussex, and the Princess Sophia. It is not generally known, that George the Fourth had Cataract; but the Duke of Sussex assured me that such was the case, and that it was one cause of his seclusion. Three years ago, a young woman came under my notice with Congenital Cataract, and she stated that her grandfather, father, uncle, aunt, and three sisters, had all been born with Cataracts.

ON SUB-ACUTE INFLAMMATION OF THE OVARIES AND OF THE FALLOPIAN TUBES, AS ONE OF THE CAUSES OF FUNCTIONAL STERILITY.

WITH CASES ILLUSTRATING THE PRACTICABILITY OF ITS CURE.

By EDWARD JOHN TILT, M.D., Physician to the Farringdon General Dispensary, and to the Paddington Free Dispensary for the Diseases of Women and Children.

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CONSIDERING the thickness of the veil thrown over the mysteries of generation, it is not to be wondered, that some of the causes of Sterility should be hidden from our view. As the general result of the practical observations of medical men, and of the dreamy imaginings of philosophers, we may class the causes of Sterility under three heads.

1. The mechanical and self-evident causes of Sterility, such as absence of the ovaria, or their complete degeneration; the occlusion of the Fallopian tubes; the stricture or occlusion of the uterus, or of the vagina.
2. The pathological or disputable causes of Sterility, or such as are not admitted by all, or, if so, are differently interpreted; viz.: chlorotic atrophy of the ovaria; syphilitic, gonorrhœal, or idiopathic inflammation of the utero-vaginal mucous membrane; and that form of Subacute Ovaritis, which is one of those affections described by authors under the common denomination of dysmenorrhœa.
3. There is also a mysterious cause of Sterility, which we may term physiological incompatibility; in virtue of which a healthy, and otherwise well-assorted pair, cannot bring their prolific fluids to that point (so to speak) of crystallization, at which life begins; while, if each of these combine with other individuals of the opposite sex, they are able to generate that definite compound called man. We purpose, for the present, to leave uninvestigated those causes which are self-evident, as well as those which are mysterious, and to call attention to one of the disputable sources of Functional Sterility, in order that the conclusions of my own limited experience may be corroborated by the elders of the profession.

The position I assume is, that Subacute Ovaritis is a frequent cause of Sterility: and I ground this opinion—1st. On PHYSIOLOGICAL DATA; 2nd. On the TESTIMONY OF AUTHORS; 3rd. On CASES.

I. PHYSIOLOGICAL DATA. It has been amply shown, by the successful experiments of modern observers, that the ovaria are the essential organs of reproduction, and that in them originate the greater proportion of those sympathies, which have been so long called uterine; and furthermore, that the development of the pelvis, of the uterine system, and of the mammæ, the function of menstruation, and all the peculiarities of the human female, depend upon the ovaria. These may therefore be considered the essential organs of the generative system, for they are always present, whatever form the organization may assume. We may, then, admit that the ovaria not only supply that *pars ventris* (as the Roman jurists used to say), which, with the stimulus of the seminal fluid, can be developed into an individual similar to his progenitors, but impel the female to seek the satisfaction of those sexual desires, which ensure the continuance of our race. It is even asserted by my friend Dr. Tyler Smith, in his valuable *Lectures on Midwifery*, that the ovaria

incite the uterus to the reflex motor actions, which are necessary to the expulsion of the impregnated ovule, when it has attained the fulness of fetal growth. These phenomena, which may well surprise us, when we consider their vast importance, as compared to the apparent insignificance of the ovaria, are the natural results of the peculiar function of these organs—menstruation. We now use this word, not in its popular and confined sense, but in the more enlarged and scientific comprehension of the term; for by menstruation, we mean the monthly and independent development and elimination of an ovule, and not merely the catamenial flow, with which it may or may not be attended. The phenomena of ovulation have been well studied in the lower animals, and also in numerous instances of unimpregnated females, dying from various causes, during menstruation. Without repeating what has been so well described by Dr. R. Lee, Dr. M. Barry, and Dr. Ritchie, we will only call to mind certain physiological facts, such as the sanguineous turgescence of the ovaria, the development of the vessels on the vesicle and on the peritoneal membrane, and the gradual thinning and ultimate bursting of the vesicle; remarking, that when similar appearances are observed on the skin, we call the process inflammation; whereas we are obliged to consider the phenomena alluded to, as the result of a healthy natural process. Though we cannot give the name of inflammation to such physiological conditions, still we may fairly admit, that the physiological excitement of menstruation may easily merge into the pathological process of inflammation. If we turn to the symptoms of ovulation, we find, that in some women, this species of parturition is not attended by more pain, than is the act of oviposition with fish; but generally it is accompanied by symptoms, which present the diminished, though faithful portraiture, of what are called uterine symptoms—pains in the loins, in the ovarian regions, and pains of an expulsive nature, or, as they are well termed, bearing-down pains. These do not depend on any mechanical pressure, but are of a nervous nature, and owe their presence to communications, which have been shown to exist, between the uterine and the spinal nerves, distributed on the surrounding pelvic viscera. These pains are often extraordinarily aggravated; and, when this is the case, may we not infer, that the ovarian excitement is passing from the physiological to the pathological type? This inference is confirmed by an increase of heat, often remarked over the site of the ovary, when examining with the hand, or by the finger, during a vaginal exploration. Morbid ovulation, with its attendant uterine symptoms, having once taken place, there will be a tendency to its repetition on each succeeding period; thus giving pertinacity to a disease, which, in any other organ, would cease by degrees. Such are the anatomical and physiological facts, and the local or immediate symptoms of morbid ovulation; but the general symptoms will vary, in accordance with the nature of the constitution, in which they may be developed; thus, if they occur in thin, nervous, highly excitable females, we have hysteria as an attendant on difficult menstruation; if, on the contrary, they take place in lymphatic, delicate females, it will be accompanied by Sterility, without even any considerable amount of concomitant pain; whereas, in the scrofulous, morbid ovulation may give rise to certain forms of ovarian cysts.

II. THE TESTIMONY OF AUTHORS. Having noticed the phenomena of morbid ovulation, and marked its prevalence, we now proceed to observe, as a fact which runs parallel to this, the extreme frequency of morbid structure in and around the ovaries. We do not allude to ovarian tumours, nor to acute ovaritis, but to the occurrence of other lesions, which are not connected with any well-defined pathological condition. MORGAGNI, in one of his admirable letters, expressed his opinion respecting the frequency of these, *then* unaccounted for, ovarian lesions. Since his time, and particularly since the impulse given to ovarian physiology, the frequent recurrence of these lesions has been noticed by our most popular writers on the diseases of women, by Drs. Ashwell, R. Lee, Ritchie, Copland, Velpeau, Newmann, etc. Now, we may allow it to be an incontrovertible principle, that when two parallel facts do not contradict, but, on the contrary, support and explain one another, they are bound together by a link of causality; we therefore conclude, that those frequent and apparently unaccountable ovarian diseases, are the sequelæ of the no less frequent process of morbid ovulation. When found in other organs, hypertrophy and vascular congestion, friability of tissue, thickening of parts, and development of false membranes, are called inflammatory; we therefore infer, that when found in the ovaries, they likewise owe their origin to inflammation, and are the results of Sub-acute Ovaritis. Conducted to this conclusion by physiological reasoning, and by the best and strongest testimony, we find, that the disease described by authors as dysmenorrhœa and menstrual colic, is a group of symptoms often produced by Subacute Ovaritis. Dysmenorrhœa may be produced by the spasmodic contraction of the neck of the womb; it may be the result of ulcerations in the cavity of the neck of the womb, or simply of its inflammation and of the temporary occlusion thus determined; but the most general cause is that, which I have just assigned. The action of Sub-acute Ovaritis in the production of dysmenorrhœa is twofold.

1. Subacute Ovaritis may of itself produce dysmenorrhœa, as a simple result of the process of morbid ovulation, and not by the agency of any appreciable inflammation of the womb, or of its neck, and without any appearance of false membrane in the catamenia. This is what I have seen, and believe to be frequent.

2. Ovaritis, as Dr. Oldham has well shown, often causes dysmenorrhœa by determining hypertrophy of the uterus, inflammation of its neck, and a diphtheritic exudation from its mucous surface. We know that the ovaries, in virtue of their governing influence over the uterus, induce periodically a state of vascular turgescence in the walls of this organ; and it is not surprising to find that Ovaritis induces frequently the exaggeration of this physiological state, or the inflammation of the inner surface of the womb and of its neck, thereby causing the retention or painful excretion of the catamenia, which are sometimes mingled with pseudo-decidual membranes. Dr. Rigby has sought to establish as a rule, that when Ovaritis is the primary affection, the catamenia are usually attended by these exudations; but we do not think the assertion is supported by a sufficient number of facts, whereas the same membraniform exudations have been found in the catamenia, when there has been no evidence of the existence of Ovaritis.

When, therefore, we remember, that, in the majority of cases of difficult menstruation, there is no such production of uterine false membranes, no inflammatory occlusion or spasmodic constriction of the neck of the womb, and that it has been amply proved that the ovaria are the point of departure of the greater proportion of those sympathies, which were formerly *all* attributed to the uterus, may we not agree with those who place the origin of the disease in those organs, which are the fountain heads of menstruation, and the centre of the sexual system in the unimpregnated subject? Having thus endeavoured to show that the disease described by authors as dysmenorrhœa is, in many cases, Subacute Ovaritis, I need not dwell on the connexion allowed to exist between dysmenorrhœa and Sterility, as two concomitant facts depending on each other, or on the same cause. The conclusions at which Newmann, Madame Boivin, and others have arrived, as the result of their great experience, is, that "Sterility generally depends upon a morbid state of the ovary, long and insidiously developed, and giving origin to other ovarian disease"; and Hufeland, the patriarch of German medicine, affirms: "that half the lifetime of those subject to dysmenorrhœa is devoted to suffering, while the remainder is blighted by Sterility."

III. CASES. Having given my reasons for believing that Subacute Ovaritis is the pathological condition, to which are often to be attributed the more or less complicated group of symptoms, described under the name of dysmenorrhœa, I now come to the cases which illustrate the position. First, however, I will attempt, in a few words, to answer a very natural question. How does Subacute Ovaritis produce Sterility? In two ways; 1st, by deranging the healthy state of the vesicles and ovules; 2nd, by impeding their exit from the ovaries.

1. Anatomico-pathologists have found the stroma infiltrated, and the friability of its tissue increased; the vesicles are sometimes found atrophied and blighted, their liquid contents partly absorbed, the follicles looking like grayish or whitish sacs, with wrinkled parietes. They may, on the contrary, be hypertrophied, of the size of a pea, or larger, round or fabiform, with an extremely dense white internal membrane, having a polished surface of the thickness of parchment. They may be diaphanous or pellucid, having interposed between them and the parenchyma of the gland, one or two other distinct membranous layers, with or without intermediate granular matter. They may contain either a green, yellow, or fatty liquid, or a pulpy substance, like the interior of an encephaloid cyst, or even solid saline concretions, as observed by Morgagni. These white bodies and cysts are never observed before menstruation; but they may be met with in every other stage of the woman's life, in virgins as well as in prostitutes.

2. The texture of the ovarian parenchyma may be healthy, but their peritoneal surface may be so coated with false membranes, that the process of ovulation is insufficient to break the impediment, and thus permit the exit of the ovule. Sometimes the Graafian vesicles themselves are so thickened, as almost to seem incapable of bursting under the influence of menstruation.

3. The anatomical lesions of the Fallopian tubes have been but little attended to; but we know, that frequently the corpus fimbriatum

is destroyed. This of itself, though it might not impede conception, would render uterine ingravidation almost impossible; for the oviduct would not be able to apply its infundibulum to that particular portion of the ovary, from which the ovum is to fall.

But the destruction of the corpus fimbriatum is, generally speaking, accompanied by the occlusion of the oviduct at its abdominal end, which is then converted into a *cul de sac*, and, of course, does not allow impregnation; the same effect would be also produced by the obliteration of the uterine end of the Fallopian tubes. The Fallopian tubes may be even free in their whole extent, but so modified by subacute or chronic inflammation, as not to allow the free passage of the seminal fluid to the ovary, or of the ovum to the womb. A web of false membranes has been frequently found lining the interior of the oviducts of prostitutes, and of those women who have recovered from puerperal metro-peritonitis; whereas the same tubes are often found full of pus in those who have died in the acute stage of the disease. Here the question naturally arises—Is not the uterine extremity of the oviduct often blocked up by a glutinous substance, similar to that which, at times, produces the temporary occlusion of the neck of the womb? This has been observed in the dead subject, and no doubt often exists in the living body. Whether or not this condition furnishes any direct therapeutical indication, we will leave for future consideration.

In some cases, the oviducts may be perfectly healthy, and still unable to perform their allotted task, owing to false membranes, by which they may be glued to the neighbouring viscera, so as to preclude the possibility of their precise adaptation to the ovaries. Varying in density, from that of the finest diaphanous membrane to that of strong ligamentous bands, these false membranes are of very frequent occurrence; and, in prostitutes, the ovaries and Fallopian tubes are seldom found without some one or other of the lesions already described, if we may rely on the testimony of Walker, Renaudin, and Dr. Oldham. Parent-Duchatelet does not allude to this fact, but he nevertheless states, that there was only a yearly average of *twenty-one* deliveries by one thousand prostitutes in Paris. I merely mention this, as bearing on the point in discussion, but do not mean to infer that the average of conceptions was equally small. Such anatomical notions are, no doubt, incomplete. Heretofore, the lesions of these organs have been neglected, because they did not embody an idea, or uphold any particular point of doctrine. As the physiology of the ovaria scarcely dates from yesterday, we need not be surprised at finding their pathology in an embryonic state. These lesions have been cursorily noticed by embryologists or physiologists, studying the ovaries from their own peculiar point of view; and, when the numerous ovarian lesions are studied with the microscope and other resources now called to the aid of the anatomist, and the facts elicited are put together by means of a constructive idea, it will then be no longer difficult to present a richer display of anatomical facts, than the meagre elements of information we now possess.

CASE. When practising in Paris in 1844, I was consulted by a gentleman, about thirty years of age, presenting every appearance of good health, who told me that his wife was in her twenty-fourth year, that at

the age of fifteen she menstruated for the first time, but that this function had always been accompanied by pain, and was frequently irregular in the time of its appearance. He had been married five years, and since then, the menstrual discharge had been more regular, but accompanied by a great increase of pain. She was seldom subject to leucorrhœa, but sexual indulgence was sometimes painful. For the last year, various means of medical relief had been tried; but with so little success, that her husband told me, he was not induced to consult me for his wife, in the hope of my being able to relieve her monthly suffering, but to inquire if there were any remedy for Sterility. The lady presented all the appearance of a lymphatic constitution; she looked delicate, but was in a tolerable state of health; she did not expect to be unwell for the next fortnight, and she was not then in pain; but on rapidly depressing the ovarian regions with the united tips of the fingers, I produced a pain similar to that she experienced when unwell. On examining by the vagina, I received an indistinct perception of a small tumour, which I took for the right ovary; but on making a rectal examination, I distinctly felt the ovaria, each being swollen to about two inches in the long diameter. They were painful on pressure. Having ascertained the tumefied state of the ovaria, and their tenderness on pressure, and bearing in mind the previous history of the patient, I considered them subacutely inflamed. I determined, however, to do nothing previously to the next monthly period, so that I might judge of the nature of her sufferings, and afterwards have full three weeks to alleviate them. A few days after, she was suffering from all the symptoms of dysmenorrhœa; the pain, on pressing the ovarian regions, was greater; and, on examining through the rectum, the ovaria were found still larger and more painful. When the period was over, I began the treatment, by applying eight leeches to each ovarian region; the leech-bites being healed, I applied over the same region a blister, five inches in length; the cuticle was not removed, and three days after, when the skin was healed, I ordered the same region to be carefully rubbed for ten minutes, morning and night, with about the size of a walnut of the following ointment: ung. hydrar. $\mathfrak{z}$ i, ext. belladon. $\mathfrak{z}$ i, ext. hyoscy. $\mathfrak{z}$ i, camph. (solut. in spirit.), gr. x. The abdomen to be afterwards covered with flannel, without removing the ointment. I also prescribed enemata, aquæ camph. $\mathfrak{z}$ xv, aquæ lauri cerasi, $\mathfrak{z}$ vi; sometimes adding tinct. hyoscy. $\mathfrak{z}$ iii. A third of this quantity was injected into the rectum three times a day, the chill having been first taken off, so that it might be as much as possible, if not entirely retained. Due attention was paid to the regularity of the bowels, mercury being avoided, and saline purgatives preferred. For the first few days, until the blistered surfaces were healed, the patient only left her bed to recline on the sofa; afterwards she was allowed to take exercise as usual, and her strength was kept up by generous diet. Abstinence from the nuptial bed was strictly enjoined. On examining by the rectum a few days before the expected time, I found the ovaria diminished in size, but still painful to the touch. The next menstrual period was accompanied by the usual dysmenorrhœal symptoms; but the patient said, that she suffered less than she had ever done since her marriage. When menstruation had ceased, I sub-

jected her to exactly the same treatment, and her sufferings were again diminished during the ensuing menstruation. She submitted to the same treatment a third time; and, on exploration, I found that the ovaries had resumed their usual size, and that pressure was not accompanied by pain. The third menstruation since the beginning of the treatment was attended by little pain. I discontinued the leeches, blister, and ointment, but advised the regular continuation of the enemata. I permitted cohabitation, at the same time recommending moderation to her husband. Four months after this, my patient was in the family-way, and in due time was delivered of a fine boy.

REMARKS.—The phenomena presented by this case are not uncommon, as many of the cases called dysmenorrhœa are attended by them all. The treatment was, at any rate, rational;—local depletion, to diminish the ovarian congestion; blisters, to break the chain of morbid nervous influences (fostered by the long habit of suffering) in the organs of ovulation; mercurial ointment, narcotic extracts and camphor, to reduce the pain and vascular excitement. The enemata were administered with the same intention. In another case, the symptoms of dysmenorrhœa were evidently caused by marriage. The patient was a young and delicate female, in whom was found the same ovarian swelling, and where similar treatment was employed; but I did not meet with an equal response in the way of attention to my advice. Her pains were, however, diminished; but relapses occurred. She was under treatment for six months; and, though she had been sterile for seven years, she shortly afterwards became pregnant. When residing at Rome, I was asked to attend a similar case, and have since heard that the carrying out of my advice was followed by pregnancy, after six years of unfruitful marriage.

I have stated that the uterine extremities of the oviducts are sometimes found, in the dead body, plugged up with thick mucus; and that this condition, no doubt, sometimes holds good in the living, thus opposing an effectual impediment to conception. Does this condition give any therapeutical indication? Dr. Mackintosh and Dr. Simpson have shown that we may, in some instances, effectually relieve patients suffering from a similar obstruction of the neck of the womb, by probing and dilating its canal. Will men of eminence likewise attempt to probe, dilate, and inject, the Fallopian tubes? We hope not, for peritonitis is not a disease to be trifled with. When we consider that we can only *guess* at this possible cause of Sterility, and have no positive evidence of its existence; when we remember that, in the dissecting-room, it is often difficult to pass a probe from the uterus into the Fallopian tube,—the difficulty of the operation seems tantamount to impossibility. This impossibility is not to be regretted; for the advantage attending the operation could only be attained, at the risk of imminent danger to the patient's life.

It was observed, at the beginning of this paper, that Sterility is not unfrequently the result of Subacute Ovaritis; and having shown this assertion to be grounded on physiological data,—the only sure basis of pathological facts,—I then confirmed this deduction by a sketch of the

opinions of our eminent predecessors and contemporaries, and lastly, adduced practical proofs of its truth.

The disease in question seems deserving of attention, for two reasons : 1, Because, if not cured, it not only maintains the existence of a state of suffering and ill health, but lays the foundations of numerous ovarian disorders, whose origin is obscure, and whose treatment is not only very dangerous, but still more uncertain ; 2, Because it admits of cure,—and nothing tends so much to the honour of the profession, as the being able not only to preserve the life of individuals, but also to enable them to perpetuate their families. Great was the gratitude of Henry II of France, to the celebrated Fernelius, for enabling him to raise issue from Catherine de' Medicis, after ten years of a fruitless marriage ; and though we cannot all be court-physicians, we may still experience similar gratitude from those, who are equally desirous of leaving to posterity their less illustrious names.

POSTSCRIPT. I did not suppose that the question—"Will men of eminence likewise attempt to probe, dilate, and inject the Fallopian tubes?" would so soon have been answered, or that catheterism of that passage had been already performed. At the meeting of the Westminster Society (May 5, 1849), following that at which my paper was read, Dr. Tyler Smith exhibited an instrument he had invented for deobstructing the Fallopian tubes in cases of Sterility arising from their obstruction or occlusion, at the uterine extremities, by thickened mucus or other impediments. The instrument, in the use of which the speculum is always required, consists of a small silver catheter, bent like the male catheter, or the uterine sound, to adapt it to the curve formed by the uterus and vagina, and having a lateral curve at the distal extremity, pointing, when *in situ*, to the uterine mouth of the Fallopian canal. Through this catheter, a fine, flexible, whalebone bougie is passed into the Fallopian tube. When the small bougie is thus passed, so as to project at its Fallopian extremity, the instrument represents accurately the singular direction taken by the generative canal, from the mouth of the vagina to the fimbriated extremity of the tube. This novel operation proposes to bring an important organ under treatment, which has hitherto been removed from all interference.

With all respect for a deservedly esteemed authority, I do not consider the interference to be of a warrantable nature, and object to it on the following grounds. 1. On account of the difficulty, if not the impossibility, of the operation. I do not think that the reality of the performance can be affirmed, unless after performing the operation on the dead body, it should be found on examination, that the probe had really penetrated into the oviducts. 2. Because, should we even admit the possibility of the operation, its mere performance would be useless, for it would not modify the inflammatory condition of the lining membrane of the tubes, which causes them to secrete the glutinous substance, and thereby produces their temporary occlusion ; whereas, if it were attempted to cauterize the oviducts, or inject them with different liquids, I consider the danger of the practice would far exceed the infirmity it is intended to alleviate. I am glad, however, to have induced Dr. Tyler Smith to bring his views on this subject, before the tribunal of the profession.

Gloucester Road, Hyde Park, May 1849.

CASES OF GOÏTRE; WITH OBSERVATIONS.

By S SCOTT ALISON, M.D., Licentiate of the Royal College of Physicians, London.

CASE I. On the 19th January 1847, Ann Wilson, aged 19 years, unmarried, of pallid complexion and lymphatic temperament, and daughter of Mrs. W. (Case II), applied for advice for Goître, at the Northern Dispensary. Menstruation had begun three years before, and though somewhat scanty, had been regular. The tumour (observed for the first time nine months before), extended from the larynx to the upper part of the sternum, and reached from the sterno-mastoid muscle of one side to that of the other. The swelling was doughy to the touch, soft, and uniform. A tonic appearing to be indicated, the infusion of gentian was prescribed: an ointment of the iodide of potassium was applied locally. On the 6th February, no material improvement having taken place in the tumour, a mixture containing iodide of iron was ordered. For the purpose of regulating the bowels, a few grains of the aloes and myrrh pill were prescribed. By the 9th of March, this treatment having effected no obvious change on the tumour, a long plaister of ammoniacum and mercury, spread on sheep-skin, about three inches in breadth, was procured. One end having been fixed at the back part of the neck, the plaster was brought round to the front and applied with gentle pressure over the tumour, then carried by the other side of the neck to the part already fixed, and applied upon it. No inconvenience, either in respect to respiration or to the circulation of the blood, was produced. The further use of the iron and pills was ordered. About a week after, the patient attended at the dispensary; she had been compelled to remove the plaster on the fifth day after its application, in consequence of a sense of itching in the part. The tumour was decidedly reduced in volume, the cuticle was desquamating freely, and the integuments were somewhat reddened. On the 16th March, the patient again presented herself at the dispensary. The house-surgeon, Mr. Dalton, was satisfied of the reduction in the size of the tumour, and another plaster was applied. Three days after, the patient came again, and complained of the irritation induced by the plaster; it was removed. The integuments were found sub-inflamed, and secreting serous fluid at several points. The tumour was decidedly still further reduced in volume. At this examination, a slight venous murmur was heard at the base of the right side of the neck; it was faint, but increased by gently pressing with the edge of the stethoscope, and by directing the chin to the opposite side, and upwards. No venous murmur could be heard on the opposite side of the neck, although every means were used to insure its detection if present.¹ The gums and the conjunctivæ

¹ In numerous examples of moderate anæmia, I have found the venous murmur confined to the right side of the neck. This suggests the propriety of not being satisfied with the examination of the left side only, in searching for this phenomena. I am disposed to refer this remarkable disparity, to the difference in the course of the venous trunks of the two sides. The vena innominata of the right side is almost vertical, while that of the left pursues an oblique course from above downwards, and from left to right. The vertical course of the right vena innominata is more favourable to the rapid descent of the blood, than the oblique course of the left, and rapidity of the circulation favours the vibration of the walls of the veins, and of the column of contained blood—the sources of venous murmur.

of the eyes were pallid; the urine was reported to be scanty, but clear; and the bowels, it was ascertained, were moved only in the course of two or three days. The continued use of iron was enjoined, and broad strips of soap cerate plaster, spread on leather, were applied in the same manner as the other plaster. Means were adopted to insure the efficient operation of the bowels. On the 26th of April, I saw the patient for the last time. The tumour was then greatly reduced in size, but by no means entirely gone; the venous murmur was still perceptible on the right side of the neck. The plasters were again ordered; the iron was omitted for a time, and replaced by decoction of cinchona, with dilute sulphuric acid. I have no later information regarding the patient.

CASE II. Mrs. Wilson, about 45 years old, native of Yarmouth, came to London twenty-six years ago. She is the mother of the former patient. The patient was tall, of pallid complexion, and rather sickly. On the 19th January 1847, she applied for assistance on account of a swelling of the thyroid body; it made its appearance, for the first time, five years before, since which time it has gradually increased in size. The physical characters of the tumour were those of Goitre, but the volume of the growth was decidedly less than that of her daughter. No record has been preserved of the treatment or of the result.

CASE III. April 7th, 1847. Louisa Ship, 15 years of age, a tall, fat girl, had an attack of typhus fever three years ago. A month after recovery, the thyroid body was discovered to be swollen. From that time, the swelling continued to increase, till some weeks previous to the above date. When first examined, the tumour was very considerable in size, and involved both lobes. It then extended from the larynx to the sternum, and was most voluminous at the lower part. It was soft throughout. Before menstruation, which took place for the first time six months before, and had since been regular, the tumour increased somewhat in volume, and partially subsided during the progress of the evacuation. This case was treated with iodide of iron, the regular administration of the aloes and myrrh pill, and with strips of plaster of ammoniacum and mercury, as in Case I. The result of the treatment was very satisfactory: in a short time, the tumour had undergone a very considerable reduction; no inconvenience whatever attended the use of the plaster. The record of this case extended over a short time only, so that I am unable to say what the ultimate result was; but everything promised that it would prove very favourable, if the treatment were duly persisted in.

CASE IV. On the 23rd June 1847, Louisa Wilson, aged 18, cousin and niece respectively of patients 1 and 2, sought assistance on account of Goitre. She was a native of Yarmouth. Neither her mother nor sisters had suffered from swelling of the neck. She was delicate, short, pallid, and weak, and underwent much fatigue as a dress-maker. She menstruated every six weeks, and for six days each period. She complained of fullness of neck between the larynx and sternum, which began six months before. The thyroid body was decidedly, yet not very much enlarged. The tumour was soft, and doughy; a loud venous murmur was heard on each side of the neck; the patient vomited occasionally; and the bowels were constipated. The case was at first treated with the aloes and

myrrh pill, and with infusion of gentian in combination with tincture of hops. The general health improved much. The plaster of ammoniacum and mercury was employed, as described in Case 1. The tumour was soon reduced in bulk; but, as happens frequently with dispensary patients, the young woman did not continue her attendance long enough to give an opportunity of judging of the success of the practice, or even to permit the administration of iron, which the irritable state of the stomach prevented at first.

Goître appears to be rarely seen in London. The four cases described in this paper, comprise all that I have met with, in private and dispensary practice, during the nine years I have resided in the metropolis. This comparative immunity may be owing to substantial diet, to the use of malt and spirituous liquors, to the active habits of its inhabitants, and the free ventilation of most parts of the town and suburbs. I met with an example of swelling of the neck, which was brought to London for advice, as a case of Goître, reported to be a disease of great prevalence in Roxburgh, the patient's native county. The patient was a weakly child of a clergyman. On examination, I found this so-called Goître to be an indolent strumous abscess, which the point of the lancet reduced to very diminutive proportions in the course of a few minutes.

The four cases above described indicate that Goître, at least as it appears in this country, is, for the most part, associated with general debility. In Cases I and IV, anæmia¹ was present, besides general debility; in Case II, there was pallor of complexion and debility to some extent; and in Case III, the immediate cause or precursor was typhus fever. The morbid growth, too, is deficient in vitality. The increased volume of the organ is not irreconcilable with this view, for it is not unusual for an organized part to be at once weak and hypertrophied. In the vegetable kingdom we have constant examples of fruits and roots attaining to an enormous bulk, yet displaying unmistakable signs of weakness of structure. Nor is the occasional presence of pus, and other products of active and vigorous action, in the true Goître, destructive to the view of the disease being one of local debility or weakened action, for it is not unusual for a growth, the result or the seat of impaired vitality, to become the subject of inflammation under the influence of certain exciting causes.

The disease is a local one, notwithstanding that it appears to be favoured in its rise and progress by certain general morbid conditions of the system, as already shown. In this respect, Goître only resembles other local diseases. In my experience, chronic enlarged glands, in various parts of the body, have followed fever and other weakening diseases. Under the same circumstances, I have remarked the joints of children to become greatly enlarged. Besides certain general conditions, such as mere debility, anæmia, and the like, which assist in

¹ DR. JAMES BEGGIE, an eminent physician of Edinburgh, my esteemed friend and former master, has, in a valuable paper, published in a late number of the *Monthly Journal of the Medical Sciences*, called the attention of the profession to the relation of Goître to Anæmia. The relation of the two diseases was prominently in my mind in 1847; one of the titles of two of the preceding cases in the index to my Note-Book being, "the alliance of Anæmia and Bronchocele."

the production and maintenance of Goitre, this disease is liable to be very commonly associated in Switzerland, with one of a very remarkable nature, *i. e.* the general hypertrophied, yet imperfect formation, and very lax, weak, and inactive condition of various structures of the body, including the brain and nervous system, known under the title of Cretinism. This general morbid condition does not appear to induce Goitre. Both diseases are of the same nature, the chief difference between them being this,—that in the first, the evil is general; in the latter it is confined to the thyroid body. The former is the disease in a general, the latter in a very restricted form. Hence it is, that Cretinism, for the most part, comprises Goitre, and that Goitre is frequently found alone.

Goitre is perhaps generally induced by the action of its immediate exciting causes upon the individual; but it is also one of those diseases which are frequently produced, without such direct instrumentality, by means of transmission from parent to offspring. At some former period, an ancestor has been exposed to its immediate causes, which have proved sufficiently powerful to induce a certain character of the thyroid gland, which is transmitted to a descendant as certainly as a mental quality, or any physical peculiarity or characteristic; and this character leads to the development of the disease under various circumstances, often in the absence of the noxious causes which had induced the disease in the progenitor.¹

The treatment is divisible into local and constitutional. The most useful local treatment is pressure applied in a moderate degree, and with caution, so as to prevent any interference with the circulation. It may be effected in the manner described in Case 1. The plaster should not be narrow, for it would then act as a ligature.² Obstructive disease of the heart, retarded circulation in the neck from any cause, the slightest tendency to head disease, and advanced age, should be regarded as contra-indicants. The old and tried remedy, iodine, is highly useful in promoting, like pressure, the absorption of the morbid growth. Mercury is likewise serviceable. Stimulants, such as ammoniacum, assist, by inducing a free action of the skin, of its perspiratory apparatus, and of its sebaceous follicles. The pressure, the iodine, the mercury, and the ammoniacum can all be comprised in the one form of a plaster!

The constitutional treatment requires the regulation of the secretions of the bowels, liver, kidneys, uterus, and skin, which are often much deranged. Fulness of the circulation from retained secretions, no less than comparative emptiness, from hæmorrhage or over-secretion, must be combated.

When the associated morbid general condition is anæmia, the preparations of iron are, of course, indicated. The iodide of iron is that which I have generally employed; it may be changed, however, from time to time. The valerianate of iron, composed of iron and vale-

¹ "The Relation of Hereditary Diseases to the General Sanitary Condition," was shown in two papers, which I contributed last year to the Health of Towns Magazine.

² The material, on which to spread the plaster, should be soft chamois leather. This will yield to the movements of the neck, and by its elasticity regain its position. It is almost invaluable as a soft, porous, retentive material for fomentations, cold lotions for the eye and head, and for many other purposes in the daily practice of medicine and surgery.

rianic acid, will be found serviceable in cases associated with hysterical symptoms, such as the globus hystericus, and other spasmodic affections.¹ After a time, chalybeates will be advantageously replaced, for a short period, by vegetable tonics and mineral acids. The most suitable of these, to alternate with the preparations of iron, are, in my opinion, the decoction of cinchona in combination with dilute sulphuric acid,—far more efficacious than sulphate of quinine; the infusion of gentian with this acid, or the hydrochloric; tannin, in doses of half a grain, dissolved in infusion of gentian and combined with nitric acid, a most efficient roborant combination, in this and many other diseases, including phthisis pulmonalis.

These vegetable tonics and mineral acids will likewise be found well adapted to cases of Goître, associated with general debility, independent of anæmia. In such examples, requiring cordial treatment, the tinctures should be employed in preference to infusions; and when a nervine or composer is required, the tincture of hops will prove highly advantageous, either with or without the aromatic spirits of ammonia, as circumstances may indicate.

The regimen most suitable for cases of Goître is well known, and therefore may be dismissed in a few words. It should embrace a substantial diet, regularity, and exercise in the open air. The place of residence, if infested with the disease, should be changed, if possible, for a locality with a dry soil, open country, and a pure invigorating atmosphere.

Park-street, Grosvenor-square, May 1849.

CLINICAL OBSERVATIONS.

By JOHN ROSE CORMACK, M.D. Edin., F.R.S.E., Fellow of the Royal College of Physicians of Edinburgh, and formerly one of the Physicians of the Royal Infirmary and Fever Hospitals of that City.

No. II.—CASES OF PUERPERAL CONVULSIONS: DEPENDENCE OF PUERPERAL CONVULSIONS ON TOXÆMIA: EXPLANATION OF THE MORE COMMON OCCURRENCE OF RENAL CONVULSIONS IN PRIMIPARÆ.

(Read before the Westminster Medical Society, May 12, 1849.)

In observations formerly made, on a Case of Scarlatinous Albuminous Nephritis,² it was stated that an albuminous condition of the urine was, *per se*, no sign of structural renal disease: that it indicated *congestion of the kidney*, and nothing more. I cited the experiments on rabbits made by Dr. George Robinson of Newcastle, and likewise a series of clinical facts, as amply establishing this important truth; and among other illustrations of toxæmia, caused by the congested kidneys being unable to eliminate excrementitious products from the blood, I mentioned the Convulsions of Pregnant Women.

¹ Some years ago, when the valerianate of zinc was introduced into practice, I applied to Mr. Morson for a valerianate of iron. He kindly supplied me with a small quantity dissolved in spirit; which is still in good preservation.

² LONDON JOURNAL OF MEDICINE, vol. for 1849, p. 451.

On the present occasion, I embrace the opportunity of pursuing this subject a little farther, and of endeavouring to show that Puerperal Convulsions are—though not always—yet generally the toxicological results of non-elimination of the excrement of the blood; and that in by far the largest number of cases, this non-elimination depends on renal congestion, caused by the pressure of the gravid uterus. When structural renal disease coexists with a gravid uterus, the *risk* of Puerperal Convulsions seems to amount almost to a *certainly*; as diseased kidneys are liable to have their functions disturbed by slight causes, and are specially disposed to congestion.

Albuminuria and dropsy are symptoms associated with Renal Puerperal Convulsions: and, independent of pregnancy, they have been proved to be sure signs of retardation of the flow of blood in the emulgent veins. The proofs are twofold. *First*, ligature of these vessels in the lower animals induces rapid renal congestion and albuminuria; and *secondly*, the records of Clinical Medicine inform us, that this condition of the urine, and likewise dropsy, are caused by aneurism, enlarged ovary, or any abdominal tumour, producing a similar, even though less perfect, mechanical impediment to the return of blood from the kidney. When we have albuminous urine, we have congestion of the kidney: when we have congestion of the kidney, we have its emunctory office inadequately performed; and whenever the insufficiency of renal depuration of the blood proceeds beyond a certain point, the blood becomes so poisonous as to act toxicologically on the brain. This, in passing it may be observed, is the explanation of the frequency of convulsions coming on in the course of Bright's disease. Slight causes may at any time excite such an increase in the congestion as to induce convulsions, stupor, or sudden death.

Dr. Tyler Smith has handled the subject of Puerperal Convulsions more philosophically than any preceding writer: but he appears to me to attribute them rather too sweepingly to irritation of the extremities of the nerves; and (while he recognizes their influence), to attach too little importance to direct toxæmic impressions on the nervous centres. With reference to the kidney, he remarks: "Irritation of the kidney has been known to excite epilepsy, and most probably it would act as a cause of Puerperal Convulsions. Lamotte and others have recorded cases of this kind. It is an old remark, that cedema of the face and neck forms a frequent premonitory attack; and Dr. Lever has made the interesting and important observation, that albuminuria is present in many instances. These points," continues Dr. Smith, "require farther examination, with special reference to the different modes in which spinal action may be excited."¹

Excluding a case of delirium and convulsions occurring in an abortion during Scarlatina (and which is briefly noticed by Dr. Tyler Smith (p. 326) as having been seen by him, with me), two cases have recently occurred in my practice, or I may say *three*, because one of the patients had convulsions in two succeeding pregnancies. Both were married:

¹ SMITH (Dr. Tyler) on Parturition; and the Principles and Practice of Obstetrics, p. 306. London: 1849. The reader is also referred to pp. 293-4, where Dr. Smith fully recognizes the influence of toxæmia as a centric cause of Convulsions.

and both were primiparæ. The case of abortion in Scarlatina is extremely interesting; but being a special one, I must defer its history, and the remarks suggested by it, to some other occasion.

CASE I. On the 27th October 1846, at 11 P.M., I was called to Mrs. S., whom I had been previously engaged to attend. It was her first pregnancy; and she was at the full time. From her diminutive stature, narrow pelvis, and excessive abdominal bulk, I had been looking forward to the labour with some anxiety, and had requested that I might be sent for, as soon as the pains of parturition set in. On my arrival, I found that she had been in labour for two or three hours, and that the pains were severe, and coming on at intervals. On examining digitally the state of the os uteri, I found that there was no dilatation whatever. For four or five hours, the pains continued to recur at short intervals: she suffered extreme agony; and the abdominal muscles were called into energetic action: still, labour hardly advanced, and at 5 A.M. the os was not more dilated than to admit the point of the fore-finger. Till then, she had had no cerebral symptoms; but about that time, I was alarmed at observing incoherence in her conversation, and stertorous breathing during the short and disturbed slumbers, which at this period occupied the intervals between the pains. Between 5 and 6 A.M. a cathartic draught acted, which had been administered on my discovering, when I arrived, that the bowels had not been moved for two or three days. Immediately after the operation of the medicine, the countenance greatly improved. Dilatation of the os also seemed advancing. As the strength and spirits were good, I had resolved to wait a little longer without interfering: but events occurred, which prevented me from remaining entirely passive. The mouth became contorted; and she had, within half an hour, a succession of slight epileptic-like seizures, each succeeding attack increasing in severity. The full pulse, swollen countenance, and turgid cervical veins, coupled with the rigid condition of the os uteri, convinced me that the safety of the patient required immediate venesection. In these circumstances, about 8 A.M. I bled her from the arm; and administered a dose of tartar emetic. The bleeding was twice repeated, from twelve to fifteen ounces being taken on each occasion, and the nauseating effect of the antimony was kept up. The intentions of this treatment were threefold: *first*, to relieve the vascular system; *second*, to promote dilatation of the os uteri; and *third*, to moderate the expulsive action of the uterus and abdominal muscles, till such time as the passage should be somewhat relaxed. The convulsions slightly returned during each recurrence of the pains, but with one or two exceptions the spasms were chiefly confined (so far as I could observe), to the muscles of the abdomen and neck. The pulse upon one occasion, immediately before one of the first most severe seizures, was so low as 50; but when the convulsions had almost ceased, the pulse rose to 80, which it numbered at noon. At this time, the tartar emetic had been suspended for an hour, and the membranes could be easily felt protruding from the womb: they burst with a discharge of liquor amnii, of unusual abundance. After this, the pain caused by the pressure of the hand seemed agonizing, and the nervous excitement of the patient was great. A grain of solid opium was administered. From this time, everything went on well: and at 4 P.M. (after

a labour of twenty hours) a living child was born. The head was strangely elongated: but in a few days there was nothing unusual to be seen in its shape. The placenta was removed by the hand without difficulty about 5 P.M., and another opiate administered. The patient had a long and refreshing sleep; and, till this day, has had no return of convulsions. She went on favourably for three days, when she was seized with phlegmasia dolens, which made her recovery tedious, though it was ultimately complete. This patient was œdematous in the face and hands and ankles, during the latter months of pregnancy: but unfortunately, the urine was not examined before, during, or after labour.

CASE II. Mrs. H., a married woman, aged 18, muscular, plethoric, of rather short stature, with abundant black hair, and reported to have been always very ruddy when in her usual health. At 9 A.M. on the 5th August 1848, I was hurriedly sent for to see this patient, who, I was informed, was in the commencement of the seventh month of her first pregnancy. I found her in a state of insensibility, and emerging from an attack of convulsions, which, from the account I received, must have been tolerably severe. The os uteri was not dilated to any extent. She had been seen by my assistant two hours previously, at which time she had had no convulsive attack, but complained of pain in the head, noise in the ears, and dimness of vision. The members of her family had observed, on the preceding evening, a wildness in her expressions, and something approaching to delirium. Cold to the head, and a brisk cathartic, had been ordered before I saw the patient: but only the first part of the prescription had been attended to. As the bowels were reported by those in attendance to be confined, as the draught had not operated, and as the jaws were so firmly clenched as not to admit of anything being got into the mouth, I directed a cathartic enema to be administered immediately, ordered the feet, which were very cold, to be wrapped up in moist hot flannels, and an evaporating lotion for the head, which was very hot, to be diligently used till I returned. The limbs, chest, and abdomen, were of a natural temperature. At this my first visit, the pulse was full, very slow, (not above 50, I think,) and occasionally intermitting: the tongue was dry, and thickly coated with a yellowish fur. During my visit, consciousness returned, though her ideas remained confused, and many of her answers to questions were incoherent. She complained of a soreness of the tongue, gums, and inside of the mouth. Her chief complaint, however, was of backache, and pain in the abdomen, which latter was increased on pressure. She complained of intense headache, and much mental bewilderment. After the convulsions had entirely subsided, I observed that the superficial veins in all parts of the body, but especially those in the head, neck, and arms, still remained very turgid. There seemed to be slight general anasarca: at all events, there was well marked œdema under the eyes, at the wrists, and at the ankles. The marriage ring on her finger, from its narrowness, seemed imbedded in the flesh. It was this which first drew my attention to her œdematous condition; which might otherwise, as regarded the countenance, have passed with me for extreme plumpness, as, from not having before seen the patient, I was unacquainted with her natural appearance.

I was obliged to be absent from 10 till 12. On returning, I found

her in strong convulsions. She lay on her back, in a rigid state, with the head thrown backwards, the face distorted, the mouth foaming, and the breath hissing fitfully through the apertures of the clenched teeth. The muscles of the arms, legs, and abdomen, were in a state of tetanic rigidity, with transient intervals of very partial and slight relaxation. The spasmodic movements of the neck and face were more active and varied. After remaining some time in this state, she struggled violently, sat up, and tore her bed-clothes and dress with her teeth and hands. At this time, or rather just as this active state was abating, the muscles of the abdomen were seen as the painter and the sculptor strive to represent them, when they wish to pourtray extreme athletic tension. On repeating the digital examination, there was still found to be no dilatation of the os uteri. The enema had not been administered, in consequence of the violent resistance of the patient, and the want of tact, or the timidity, of those in attendance. I therefore ordered it to be given immediately; and waited in the house till the bowels had been relieved by it. After a very abundant evacuation of black, hard, and fœtid fœces, the patient became decidedly more natural in appearance: and I left her about 1 P.M. pretty tranquil, almost asleep, and quite free from any convulsive affection. When I returned at 2 P.M. she was asleep; and I was told that she had continued in this state since I had gone away: that at first she had seemed easy, and breathed freely, but that she had gradually become restless, flushed in the face, had shrieked suddenly several times, and had, just before I entered, attempted to get out of bed. Her face was of a deep red, or almost purple colour, her breathing was stertorous, and there was great turgidity of the external vessels of the head and neck. There was slight twitching at the angles of the mouth. I attempted to rouse her by laying my hand on the shoulder, and then gently shaking her: when, immediately—but whether in consequence of, or simply coincident with, this movement of her body, I cannot say—she became seized with violent convulsions, the paroxysm differing in no respect from the aspect of a severe fit of epilepsy. Everything had been already prepared for performing venesection; so I at once opened a vein in the arm. The blood flowed in a full and rapid though unsteady stream: and whilst it flowed, the patient was held with the head and shoulders raised by several attendants. The turgidity of the veins of the head and neck soon abated; and the convulsions, though very frightful during the whole time of the bleeding, had notably diminished in severity before its conclusion. From the condition of the patient, some of the blood was dispersed over the bed and the apartment; but I think the quantity taken was not less, and perhaps a little more, than twenty fluid ounces, apothecaries' measure. The bleeding seemed greatly to relieve the embarrassed respiration, and to diminish the stupor; but the convulsions, though decidedly less severe, and of a less apoplectic aspect, continued to recur about once every hour till 9 P.M. The first symptom of a coming convulsion was raising her hand to the head, turning up the eyes, and before some of the seizures, in addition to these threatening signs, she shrieked. After the bleeding, I had ordered an antispasmodic mixture, containing opium, valerian, and assafœtida, to be regularly taken at short intervals, but, as I can testify from the trials which I made myself, it was quite impossible, without causing dangerous excitement,

to make any forcible or even persuasive attempt, to get her to swallow a dose of this or any other medicine. When apparently conscious of what she was doing, she was violent, reckless, and obstinate in her behaviour,—in fact, maniacal. The vein was re-opened, and about ten ounces of blood allowed to flow; and a turpentine enema was also administered, which produced a copious motion, similar in character to the former. These measures were adopted about 7 P.M.; and, an hour afterwards, a starch enema, containing a drachm and a half of the Edinburgh College solution of the muriate of morphia,¹ was administered. At 9 P.M., there was a little dilatation of the os uteri; she was quite calm: and when I examined the abdomen with the stethoscope, there was not the slightest muscular spasm. I could not detect the sounds of the foetal heart, and from the patient's statements, along with this negative evidence, I announced my belief that the foetus was probably dead, and that any operative interference, which might be required for the mother's safety, ought not be objected to, from the hope of a living child being ultimately born. Between 9 and 10, when I left her, she seemed disposed to sleep, breathed easily, and was perspiring. I gave instructions to the attendants to administer the mixture formerly prescribed; and to send for me, if the convulsions returned, or if labour seemed to be advancing. To my surprise, I was not sent for during the night. It may here be stated, that hardly any urine was passed by the patient, during the twelve hours that I was in pretty close attendance upon her; and it was averred by her, that she had not made any for many hours before her seizure. For some days before that time, it was more abundant than natural. As to these facts, however, there was some ambiguity in the evidence. The important point, as regards the urine, is this—that what she passed (about two ounces) when I was with her, was found intensely albuminous, when treated by heat and nitric acid. The blood, especially that taken at the first bleeding, was cupped and buffed.

6th August. At 7 A.M., I found her in a quiet sleep: and was told that she had passed a tranquil night. Two doses of the antispasmodic mixture had been taken. The pulse was 74; and the skin moist. In the evening, she continued as well as in the morning. During the day, she took some beef-tea, and one or two doses of the mixture. There were some slight pains during my second visit, and an examination was then made, by which it was discovered that the os uteri was a little more dilated.

7th August. During this day, she continued in a comfortable and tranquil state, and sat up for some hours in the evening. When questioned as to her feelings, she said that she had some headache, and occasional pain in the back and abdomen. The os uteri was sufficiently dilated to admit the point of the fore finger. There was no preter-

¹ The following is the formula for this preparation. Take of Muriate of Morphia, one drachm and a half; Rectified Spirit, five fluid ounces; Distilled Water, fifteen fluid ounces. Mix the spirit and the water, and dissolve the muriate of morphia in the mixture with the aid of a gentle heat.

The uniformity of strength makes it preferable to the Tincture of Opium, when large doses are given, and may have to be repeated. The London Pharmacopœia contains no official formula for prescribing the muriate or acetate of morphia, which is an inconvenient omission; but it gives instructions for preparing the salts, which are of no practical value to the physician or the pharmacist, and which the manufacturer would be sorry to take as his guides.

natural heat of the part, and the digital examination caused no pain. No medicine was prescribed or taken. She had two copious motions of an improved appearance. The urine was abundant, and was very slightly albuminous.

8th August. In the afternoon, when I called, the report of her state since my last visit was favourable. Her countenance was natural : but she complained of pain in the back, and also of headache. The urine was not chemically examined ; it was sufficient in quantity : but the bowels had not again been moved. The breasts, which all along had been somewhat turgid, were now painfully so : they were hard, knotty, and painful to the touch, and a milky fluid exuded from them in such abundance, as to require frequent change of linen. A dose of sulphate of magnesia was prescribed ; and an hour after it had been taken, a draught of henbane and valerian.

9th, 10th, and 11th, August. The urine was very slightly albuminous. During these days, the state of the mammæ was the only troublesome symptom. This was treated by gentle frictions, fomentations with poppies when the pain and tension were great, and by doses of sulphate of magnesia and tartar emetic, so as to keep up a watery discharge from the bowels. When she lay down, the headache returned, for which reason she was up and dressed the greater part of these three days. As she was up when I called, there was no digital examination made.

12th August. During the night (between the 11th and 12th) she had some slight convulsive attacks, and during the day, several of great severity. Her condition was so alarming, that I could not leave her even for a short time without anxiety ; and during my short necessary absences, my assistant remained with her. She had convulsive attacks with the same periodic regularity, as the pains in ordinary labour ; and though she was generally insensible, it was evident that with each fit the uterus was becoming dilated, and was actively engaged in the process of expulsion. Though considerable progress was being made, yet from the great remaining rigidity of the os uteri, and the apoplectic aspect of the patient during the convulsions, I repeated the bleeding to the extent of about six ounces ; and resolved, whenever the os uteri became a little more dilated, to perforate the head and extract the fœtus. After the bleeding, however, the dilatation proceeded rapidly, and the convulsions greatly moderated : and though anxiously watching, I did not farther interfere. At 6 P.M., a dead fœtus was born, without her having had, from the very first, what could be called labour pains ; for her state throughout was generally one of insensibility, and the expulsive process went on steadily during each fit of Convulsions, which recurred in as regular paroxysms as ordinary labour pains. She made a complete and rapid recovery. Within a week, she was going about as if nothing had occurred to her. Her feelings of comfort were such, that all my cautions were thrown away ; fortunately, no bad consequences resulted from the little care which she took of herself. I discontinued my attendance about the end of August.

Very soon afterwards, she became pregnant ; and, in consequence, was much harassed with headache, nausea, and vomiting. I did not, however, see her again professionally, till the 21st of January 1849, when I was, as on the first occasion, hurriedly sent for. I was told that she

had just come out of a severe convulsive attack, similar to those from which she had formerly suffered. I found her not convulsed, but in a state of stupor, from which, however, she emerged speedily, though she continued in a somewhat stupid and bewildered state. The os uteri was soft, and dilated to nearly the size of a shilling. From this state of the womb, the regular recurrence of labour pains, (or rather of uterine contraction accompanied by convulsions,) and the absence of the alarming apoplectic symptoms which had characterized the convulsions which occurred in her first pregnancy, I thought that abortion would occur sufficiently soon to put the patient out of danger, and obviate the necessity for active treatment. After sufficient purging, anodynes were freely given. My prognosis, as to the speedy occurrence of abortion, proved erroneous; for the uterine contractions and the Convulsions both subsided within twelve hours, the patient got quite well, went about with her dilated uterus, and did not miscarry for two months. Abortion took place on the 23rd of March. From the 22nd of January to the 20th of March, she enjoyed tolerable health, and had no recurrence of the convulsions. When she allowed a day to elapse without going to stool, she suffered from headache and giddiness, but a little care in regulating the bowels obviated these unpleasant symptoms. On the 20th, labour pains set in, and continued, with longer or shorter remissions, till a dead fœtus, of apparently between the 6th and 7th month, was expelled on the 23rd of March, without much suffering, and without the recurrence of convulsions. After the abortion, she made a speedy and complete recovery; and has since enjoyed good health.

REMARKS. The observations which follow, though suggested by the preceding cases, apply, in a great measure, to the subject of Puerperal Convulsions generally. It has long been familiarly known to practical obstetricians, that convulsions are to be dreaded in women who have become œdematous during pregnancy; but till very lately the meaning of the sign was not attended to, and even yet has not been fully appreciated. In a work on Obstetrics, published in America during the present year, Dr. Meigs, in speaking of *œdema gravidarum*, says:—"It is proper to remark, that women, who are very much swelled, are to be deemed far more liable to Puerperal Convulsions, than such as have no swellings; for these infiltrations, produced by pressure on the ascending venous columns, suffer a similar pressure under the descending arterial columns of blood; which gives cephalic engorgement. Good care should be taken to obviate such dreadful attacks. To be forewarned, is to be forearmed."¹ It would be strictly correct to go farther than Dr. Meigs, and to say, that Puerperal Convulsions very rarely occur in women who are not œdematous to a greater or less extent. It would likewise be true to say, that, along with the dropsy, there exists an albuminous condition of the urine. Many women have slight œdema and albuminuria, and some have both to a considerable extent, and yet escape convulsions; but, if we exclude hysterical convulsions, and convulsions from anæmic affections, which are not peculiar to the puerperal state, very few, if any, of those affected with true *eclampsia gravidarum*, are

¹ MEIGS (Dr. Charles D.), *Obstetrics; the Science and the Art*, p. 206. Philadelphia: 1849.

not the subjects of anasarcaous effusion and albuminuria. Attention was, I think, first directed to the coincidence of albuminuria with Puerperal Convulsions by Dr. John Lever. He announced the fact, that in nine out of ten cases, in which he had examined the urine, it was found to be albuminous.¹ Drs. Devilliers and Regnault, in a valuable memoir on the Dropsy of Pregnant Women (published during the past and present years in the *Archives Générales de Médecine*), declare, as a remarkable and essential fact, that “chez toutes les femmes éclamptiques, on trouve de l’albumine dans les urines. Cette règle ne nous a pas encore paru souffrir d’exceptions.”² If it be a fact, then, that albuminous urine and anasarca—the characteristic signs of congested kidney—be so common in Puerperal Convulsions, as to be regarded, by the best and most recent authorities, as their constant concomitants, it may, I think, be very safely inferred, that the renal congestion is the cause of the convulsions; or, to be more explicative and precise—that the convulsions are direct toxicological effects on the nervous centres, produced by poisonous substances which the unembarrassed kidney could throw off with the urine, but which the congested kidney cannot excrete. In pregnant women, blood-poisoning exists far more commonly than is generally believed. There is a series of phenomena resulting from different degrees of toxæmia—such as nausea, vomiting, coma, delirium, convulsions, and mania—which may, on a subsequent occasion, form, either separately or collectively, the subject of another paper.

It is important to remember, that the gravid uterus, or other tumour, pressing on the renal veins, or in any way seriously impeding the return of blood from the kidneys, must induce, more or less, inability on their part to perform their emunctory office; and, when the pressure is great, a consequent condition of toxæmia. It must also be remembered, that the maternal blood, during utero-gestation, notwithstanding the demands made on it for phosphate of lime, etc., by the fœtus, requires, in some respects, an extra degree of depuration, and that, therefore, the pregnant woman can very ill bear an impediment to the free return of blood from the kidney. She probably requires, for her preservation in health, to throw out a large additional amount of excrementitious matter from her blood, as it is charged with the matter depurating from the fœtus, in addition to the ordinary depuration essential to her maintenance in health in the non-pregnant state. The elements of the milk also require, during utero-gestation, to be thrown off by the kidneys; and “kiestein,” which may generally be found in the urine after the second month of pregnancy, is presumptive evidence that this depuration is going on; for Dr. Golding Bird, Dr. Peddie, and others, have shown that this product contains some of the elements of the milk.³ Dr. Golding Bird says:—“the imperfectly formed secretion of milk, not

¹ LEVER (Dr. John), in *Guy's Hosp. Rep., Second Series*, p. 495. London: October 1843.

² DEVILLIERS et REGNAULT, *Archives Gén. de Médecine*, 4me Serie, t. xvii, p. 295. Paris: Juin, 1848.

³ PEDDIE (Dr. Alexander), on the Mammary Secretion, in *Edinburgh Monthly Journal of Med. Science*, Aug. 1848. He says:—“With the aid of the microscope, I have fully satisfied myself that this product (kiestein) contains some of the elements of the milk.” This observation of Dr. Peddie may be doubted by some, because kiesteine has been found in the urine of non-pregnant women, and even in the urine of men. Its presence indicates that a species of depuration is going on, but with the nature of it, we are not yet fully acquainted.

having a ready exit by the mammæ, is taken up into the circulating mass, is separated by the kidneys, and eventually escapes from the body by the urine."¹ Many of the distressing symptoms, which so often attend pregnancy ought, I think, to be considered as resulting from toxæmia, dependent on defective sanguineous depuration, and treated accordingly. I must not be understood as saying that diminished renal elimination is the only cause. The skin, the lungs, the liver, or the kidneys, may one or all be in fault: but, from the pressure of the gravid uterus, the latter run the greatest risk of having their functions impaired. If the kidneys be embarrassed from the congestion caused by the gravid uterus, urea will remain in the blood, and likewise the elements of the milk. The non-elimination of the lacteal elements is much less dangerous than the retention of carbonic acid in the lungs, or of the poisonous principles of the bile and urine; as the former, being oleaginous, saccharine, and albuminous, are not very dissimilar to the constituents of the blood. Milk fever, however, which ought to be regarded as truly a poison-disease, is sometimes pretty severe, if active derivative treatment be not adopted. The state of the mammæ in the case of Mrs. H. merits special notice. In her, most probably, the elements of the milk were not adequately got rid of by the kidneys.

The Convulsions occurring to virgins and others at the menstrual period, commonly known by the name of Uterine Epilepsy, are often reflex phenomena, but they may in many cases depend on toxæmia sometimes acting as a predisposing, and at other times as a centric and direct, cause: for the poisonous nature of menstrual blood, and its highly carbonized constitution, is believed in by physicians and chemists.

The same remarks apply much more strongly to the lochial discharge. Its suppression, like that of the menses, may induce attacks of Uterine Epilepsy, or, to use the other name, Puerperal Convulsions. In such cases of post-partum Puerperal Convulsions, should no structural disease of the kidney exist, the urine is not likely to be albuminous, nor the surface œdematous: but I am inclined to think, from cases which have occurred under my own observation, that anasarca is present in a large proportion of those cases in which convulsions occur from suppressed menses.² In such circumstances, I have seen anasarca, albuminous urine, and lethargy, which were soon relieved by purging: more serious results being probably averted by this treatment. There must have existed renal congestion.

It generally happens that when the uterus is emptied, the convulsions cease: and they seldom recur after delivery. When they do recur, we must suspect an insufficiency in the lochial secretion, or structural renal disease. The explanation of delivery generally arresting the Convulsions, is not so much that the uterine irritation is lessened, as that the kidneys are relieved from their hyperæmic condition, and thus become enabled to resume the proper exercise of their function.

By adopting this view, we obtain an EXPLANATION OF THE MUCH GREATER FREQUENCY OF PUERPERAL CONVULSIONS IN PRIMIPARÆ.

¹ BYRD (Dr. Golding), in *Guy's Hospital Reports*, April 1840.

² I have published cases of Convulsions and Mania from suppression of the catamenia, in an *Essay on Transient Insanity*, in the *Edinburgh Monthly Journal of Medical Science*, p. 903, vol. for 1843. The cases in that paper might have been correctly considered as illustrations of toxæmia.

The individuals most commonly the subjects of Puerperal Convulsions are strong healthy young women, pregnant for the first time : that is to say, a class of patients in whom the abdominal walls are the most unyielding, and least able to relax under the pressure of the expanding womb. Dr. Collins says that "Puerperal Convulsions occur almost invariably in strong plethoric young women with their first children, more especially in such as are of a coarse thick make, with short thick necks"; and "in thirty cases which occurred during his mastership, twenty-nine were in women with their first children; and the other single case was a second pregnancy, but in a woman who had suffered a similar attack with her first child."¹ Some of the particulars of this case are detailed by Dr. Collins. Convulsions occurred after as well as during labour, which leads us to suppose that the toxæmia did not depend mainly, or at least not entirely, on renal causes. The patient may, however, have been the subject of such structural renal disease as to facilitate the production of dangerous congestion, or she may have had some ovarian or other tumour causing like tendencies. The uterine excitement may also undoubtedly, in some cases, be the immediate cause of exciting Convulsions in those in whom toxæmia pre-existed, though remaining latent as to its effects, being only of sufficient intensity to operate as a predisposing cause. Dr. Joseph Clarke mentions nineteen cases of Puerperal Convulsions, of which number sixteen occurred in primiparæ.² Dr. S. Merriman met with forty-eight cases, and thirty of them were in primiparæ.³ Dr. Lever, in his paper already referred to, notices that eight out of his fourteen cases were in first pregnancies. It would be interesting to know how many of the eight had ever gone to the full time, as well as other particulars with which we are not furnished. Chaillu observed thirteen cases at La Clinique of Paris, of whom nine were in primiparæ : Dr. Johns, quoting from the ward-book of the Dublin Lying-in Hospital for a period of two years, mentions that of nine women who had convulsions, and twelve who were threatened with them, all except two were pregnant for the first time. These two had had convulsions in previous labours. It is to be regretted that many of the most esteemed authors, in giving their experience in this class of cases, do not state how many occurred in first births : but the above accounts being taken without selection from such works as I have access to, may be considered as probably a fair view of this question in obstetric statistics. It is not perhaps necessary to multiply citations of this kind, as the fact of primiparous women being the most subject to Convulsions is generally recognized : but I may just add, that I am now, as leisure admits, engaged in an analysis of all the reported cases of Puerperal Convulsions, and find that as the number of cases augments, so, in like proportion, is the augmentation in those which were first pregnancies. At present the following tabular recapitulation may suffice :

¹ COLLINS (Dr. Robert). *Practical Treatise on Midwifery*, containing the result of 16,654 births which occurred in the Dublin Lying-in Hospital, p. 201. London: 1834.

² COLLINS. *Op. cit.* p. 200.

³ MERRIMAN (Dr. Samuel). *Synopsis of the Various Kinds of Difficult Parturition*. New Edition, p. 148. London: 1838.

By whom observed.	First Pregnancies	Subsequent Pregnancies	Total cases.	Whence quoted.
Collins.....	29	1	30	Collins, op. cit. p. 201.
Clarke.....	16	3	19	Collins, op. cit. p. 200.
Merriman	36	12	48	Merriman, op. cit. p. 148.
Lever.....	8	6	14	Guy's Hosp. Rep. 1843.
Chailly.....	9	4	13	Chailly, by Bedford, p. 265.
Johns.....	19	2	21	Dub. Journal, Sept. 1843.
Total..	117	28	145	

In primiparous women there is—as a general rule—a greater tenseness and rigidity of the abdominal parietes; and therefore in them the gravid uterus is much more apt, by its inward pressure, to cause dangerous renal congestion. *This obviously explains why primiparae are the most liable to Puerperal Convulsions*; and why Convulsions in them are chiefly of a renal, and therefore of a severe and epileptoid character. It is probable that in them albuminuria is associated with the œdema of the face and upper part of the body, which is sometimes seen in many of them who escape Convulsions: for it must be remembered that *the albuminuria and œdema are simply signs of congested kidney*, and that congestion may exist—and indeed often does exist—to an extent quite sufficient to cause these phenomena, and yet be inadequate to produce toxæmia of sufficient intensity to cause Convulsions.

The frequent omission of details renders it impossible to make a complete analysis of the history of those cases in which convulsions occurred in subsequent pregnancies: but the result of my inquiry is, that all the fully reported cases which in their mere numerical aspect limit the rule, on a scrutiny tend to establish it. These cases may be considered as chiefly toxæmic, but some are non-toxæmic. Those of toxæmic origin may all be classed under four heads, viz.: 1. Persons who, though previously pregnant, had never gone to the full time, and in whom, therefore, there had been no relaxing of the abdominal walls. 2. Persons of extreme muscular development, whose rigid fibres do not readily yield to the augmenting womb. 3. Persons who, from organic changes in the structures of the kidney, cannot adequately perform renal depuration of the blood; among whom may be included—those suffering from granular or other structural disease of the kidneys; or who have some congenital anatomical peculiarity in these organs;¹ or in whom some morbid growth presses on the emulgent veins, or, indirectly by its presence, impedes the free flow of blood through these vessels. 4. Excessive volume of uterine tumour, including plural pregnancies, and cases of superabundant liquor amnii.

¹ This remark brings to my recollection a remarkable case, of which the following brief outline is given by Dr. ROBERT LEE, at p. 112 of his *Clinical Midwifery*. "A young woman, in the sixth month of her second pregnancy, died of chorea, on the 29th August 1840, in St. George's Hospital. The symptoms were at first slight, and were apparently produced by fright. The convulsive movements became so violent, that it was found necessary to put on a strait-waistcoat, and fix her down to the bed. Forty-seven hours before death, the contents of the uterus were expelled. The brain and spinal marrow were perfectly healthy. There were some small vegetations in the mitral valves; the right kidney and ureter were wanting; the supra-renal capsule was present. The uterus was in a natural state. The corpus luteum was unusually small, and the coats of the Graafian vesicle could scarcely be seen within the yellow matter."

The *first* class is very numerous; and embraces the second attack of my patient, Mrs. H.

The *second* class seems also to include a number of cases.

The *third* class is not numerous: but it is important, when we recollect how often, in the course of Bright's disease, when we have greatly relieved the head symptoms, and reduced the œdema and albuminuria by derivative treatment, Convulsions or death abruptly occur from exposure to cold, from some error in diet, or other accidental cause. In such instances the coagulability of the urine returns to its greater degree of intensity. It is quite plain that a pregnant woman labouring under Bright's disease, even in an early stage, must in this way run a tenfold risk of Convulsions. If she have an ovarian tumour, or any other mechanical predisposing cause to renal congestion besides the gravid uterus, her risks will also be great. In her, too, delivery will hardly bring exemption from the danger of toxæmia from renal non-elimination. Dr. Simpson said, in 1843,¹ that he had been accustomed to teach in his Lectures, that "patients attacked with Puerperal Convulsions had almost invariably albuminous urine, and some accompanying or rather preceding dropsical complications, and hence probably granular renal disease." This latter remark of Dr. Simpson, with deference to so high an authority, I must dissent from. Under proper management, the majority of those affected with Puerperal Convulsions quickly and perfectly recover, and in future pregnancies are very rarely affected. Undoubtedly, women who have structural disease of the kidneys are pre-eminently liable to renal congestion and consequent toxæmia: but then œdema, albuminuria, and Convulsions, are not in the Puerperal woman pathognomonic of any organic disease of the kidney, though in the *fatal* cases we may expect them to be often present. Dr. Simpson's cases, to which I formerly referred, are interesting in this point of view. In three fatal cases of Puerperal Convulsions, he found on dissection a great amount of renal disorganization. Albumen was looked for in the urine during life, but was not found.²

The *fourth* class of cases is interesting. More accurate statistics, than those yet given by authors, are required, before we can do more than state generally that a bulky uterine tumour predisposes to Convulsions: and that in some its presence may render a subsequent pregnancy as liable to them and in the same way, as the rigid parietes of a primiparæ. The facts which best illustrate this position, are such as the following:—Dr. Collins, in 240 cases of twins, had three cases of Convulsions: and in his grand total of 16,654 labours, he had only thirty cases of Convulsions; hence, in twin cases there occurred 1.25 per cent., and in single pregnancies 0.18 only per cent. Two of Dr. Merriman's 48 cases of Puerperal Convulsions were twin cases; and so were two of the 13 cases reported by Chailly. It is to be regretted, that Drs. Merriman and Chailly do not give the total number of labours, in which these cases occurred. With regard to some of the Convulsions which occur after delivery, it must be borne in mind, that they are not toxæmic, but truly

¹ Edinburgh Monthly Journal, Nov. 1843, p. 1015.

² LONDON JOURNAL OF MEDICINE for last month, p. 453; and Edinburgh Monthly Journal for September 1847, p. 212.

anæmic; and in some of the twin cases in which there was much hæmorrhage, want of blood seems to have been the cause of spasm.

Some authors have explained the fact of the *unmarried being more subject than the married to Puerperal Convulsions*, by assuming, that in the former, greater emotional causes are present. Another explanation, however, is more in accordance with the series of facts now brought forward. Allowing that emotion may often, both in the married and unmarried, be concerned as an accessory cause; and granting that it may even sometimes be the proximate cause of exciting Convulsions, through the medium of a brain¹ already in an apt state to be so influenced, in consequence of the action of previous toxæmia; yet, as regards those who have become pregnant out of wedlock, it seems natural to infer, that the tight girding of the abdomen, which they so often practise to such an extraordinary extent, to conceal their shame, may act most powerfully, in producing extreme congestion of the kidney and consequent intense toxæmia.

Death of the fœtus in Mrs. H. seemed, in both pregnancies,² to precede the attacks of Convulsions. This observation is important, because when this event takes place, there is inevitable toxæmia, which may be looked on as nature administering a poison for the purpose of accomplishing abortion. If the fœtus die, the matters which were being taken out of the mother's blood for its growth, suddenly cease to be required: and the depuration by the fœtus also ceases.² In these circumstances there must, I think, be more or less toxæmia. When the supply of material for the fœtus from the uterine vessels of the mother suddenly terminates, by its birth at the full time, the lochial discharge comes to her relief, and so long as it is in sufficient abundance, she has small hazard of toxæmia. That to preserve from toxæmia is the use of the lochial discharge cannot be doubted, when we contemplate the phenomena which arise when it is scanty or suppressed; and when we see that in most instances in which women who do not nurse their infants and yet enjoy good health, it continues to flow for six weeks in place of ten or fourteen days. When Convulsions occur or recur after delivery, the toxæmia most probably arises from imperfect excretion or complete suppression of the lochia: but it may also depend on the kidney being congested from structural disease in itself, or from pressure on the veins caused by the morbid enlargement of some neighbouring part.

It must be borne in mind, that though the puerperal woman is liable to Convulsions from special causes, she is also subject to them from others which act on persons who are not gravid; though from some convulsive attacks, *e. g.* epilepsy, she seems very frequently to be respite, in virtue of her pregnancy. The following arrangement of Convulsive affections, with reference to their causes, as they occur both in the Puerperal and Non-puerperal states, seems to be correct and convenient.

¹ The brain, properly so called, can, we suppose, have, in any circumstances, but an indirect share in causing convulsions, which depend on the spinal column and medulla oblongata. The acephalous fœtus generally dies of convulsions.

² The meconium with which the bowels are distended at birth, and the urine found in the bladder, are clear proofs of active fœtal depuration. If the fœtus performed no bloodmoulting for itself, it would not contain within it deposits of excrement, nor would it be so liable to diseases similar to those of extra-uterine life.

ALL CONVULSIONS ARISE FROM

- | | |
|--|---|
| 1. TOXÆMIA, | } acting directly on the spinal column and medulla oblongata. |
| 2. ANÆMIA, | |
| 3. HYPERÆMIA, OR | |
| 4. IRRITATION OF THE EXTREMITIES
OF THE NERVES, | } acting in a reflex manner on the spinal column and medulla oblongata. |

The sources of toxæmia causing convulsions are very various. They may be thus succinctly arranged.

SOURCES OF TOXÆMIA CAUSING CONVULSIONS.

- | | | |
|--|---|---|
| I.
DEFECTIVE DEPURATION
OF THE BLOOD. | } | 1. Non-evolution of carbonic acid, etc. by the lungs. |
| | | 2. Non-elimination of the principles of the bile from the blood. |
| | | 3. Non-elimination of the principles of the urine from the blood. |
| | | 4. Non-elimination of urea, etc. by the skin. ¹ |
| | | 5. Non-elimination of accidental effete matters from the blood, by the kidneys and other emunctories. |
| II.
INTRODUCTION OF FOREIGN
MATTER INTO THE BLOOD. | } | 1. Inorganic poisons, such as acetate of lead, etc. |
| | | 2. Organic poisons, such as strychnia, etc. |
| | | 3. Morbid poisons, such as scarlatina, etc. |

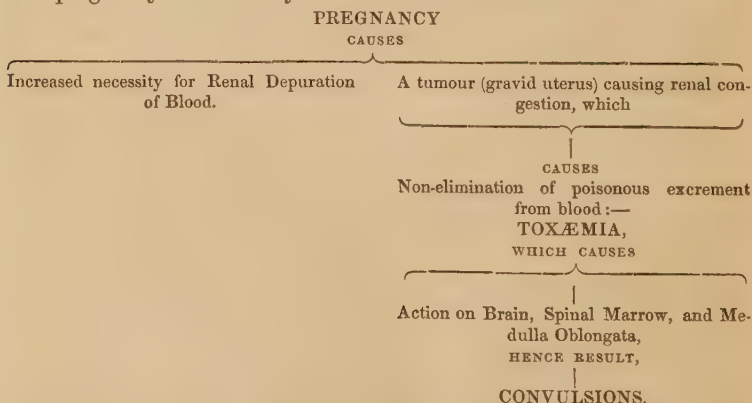
While the pregnant woman is not exempt from any of the above causes of toxæmia, she is specially in danger from those comprised under the third and fifth divisions of the first head: viz. non-elimination of the principles of the urine by the kidney; and non-elimination of accidental effete matters from the blood by the kidneys and other emunctories. While admitting the importance of every emunctory to the puerperal woman, it may still be correctly stated, that all

TOXÆMIC PUERPERAL CONVULSIONS are mainly

1. RENAL, OR
2. LOCHIAL:

or they may partake of both, along with other, characters. The chief object of the present paper is to point out the importance of the former: but in doing so, I wish explicitly to mention defective elimination from any organ as a cause of more or less toxæmia: and also to recognize non-toxæmic causes of Puerperal Convulsions.

1. RENAL PUERPERAL CONVULSIONS. The following diagram shows how pregnancy of itself may cause Renal Convulsions:



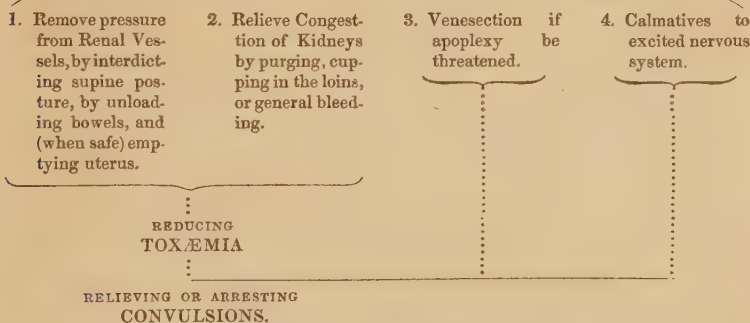
¹ Landerer has shewn that urea is normally excreted by the skin. (Dr. Garrod's Lectures in *Lancet*, vol. ii, 1848, p. 653.) It is very important to bear this in mind, for it shows that

The existence of organic disease of the kidney greatly augments the risk of Renal Convulsions during the Puerperal state. And as was formerly stated, the continuance of the pressure of the gravid uterus after the death of the fœtus, must be specially apt to induce toxæmia; for if the elements for the nutrition of the fœtus suddenly cease to be required, the maternal blood must for a time be charged with superfluous and foreign matter.

The *Prophylaxis* of Renal Puerperal Convulsions must evidently embrace an avoidance of too long continuance in the supine position; an easy corset, giving free play to the lungs, and not pressing back the womb; moderate exercise; regularity and sufficiency of the alvine evacuations, and a good state of the skin. Mental excitement must also be avoided, as it might, even with a moderately poisoned state of the blood, be the immediate cause of Convulsions. It is natural to suppose, that when toxæmia is present, congestion of the nervous centres is more dangerous than when the superabundant blood is healthy.

The *Treatment* of Renal Puerperal Convulsions is a subject on which a great deal might be said; but having already exceeded my limits, the leading intentions only, are, for the present, indicated in the following diagram:

TREATMENT.



A few remarks on Lochial Puerperal Convulsions, along with some observations on Non-Toxæmic Puerperal Convulsions, are deferred to a future occasion.

Essex House, Putney, May 1849.

an increased action of the skin may relieve the kidneys in other ways than merely by getting rid of water. In the report of the case of H. L. D. (*Scarlatinous Nephritis*), at p. 456 of the last Number, it is noted, that at one period there was retention of urine for seventy hours, during which the patient had a strong urinous smell. The skin was in this instance acting vicariously for the kidney; and by the breath also, most probably, were exhaled the poisonous constituents of urine.

BIBLIOGRAPHICAL RECORD.

PRINCIPLES OF MEDICINE: including General Pathology and Therapeutics, and a Brief General View of Etiology, Nosology, Semeiology, Diagnosis, Prognosis, and Hygienics. By CHARLES J. B. WILLIAMS, M.D., F.R.S., Fellow of the Royal College of Physicians; Professor of the Principles and Practice of Medicine, and First Physician to the Hospital, University College, London. pp. 533. London: 1848.

DR. WILLIAMS, taking full advantage of the progress of anatomical, physiological, and chemical research, has so applied the knowledge which has been thereby obtained, as to produce the best, and the only complete, treatise which has yet been published, on the Principles of Medicine. Our knowledge of the nature and treatment of diseases can be advanced only by investigating them with the aid of the strong lights of modern science, in conjunction with accurate clinical observation. Throughout the volume, we find evidence that this sentiment influences the mind of the author; and, although occasionally by no means sparing in theory, he never allows it to take the place of fact. The work, moreover, possesses such entire freedom from verbiage, and clearness of diction, that the reader is always enabled to judge what may be considered as actually known, and what still remains matter of probability or inference. In this respect, as well as in others, the work of Dr. Williams is superior to that of Dr. Alison, which is, perhaps, the only one worthy of being mentioned along with it. It is impossible to say enough in commendation of Dr. Williams's *Principles of Medicine*; but, as a work of such sterling merit, and so long well known, it needs no lengthened recommendation at our hands. It is a book which every conscientious medical student must not only read, but carefully study; and there is no practitioner, however great his experience, who can fail to derive benefit from frequently consulting this work, which, from its comprehensive character, may truly be styled a library of medicine, from which the rubbish has been cleared away.

The first edition appeared in 1843, and contained 390 pages. The second edition contains 533 pages, and hence has undergone considerable additions. "These," says Dr. Williams, in his Preface to the second edition, "pervade almost every portion of the work, but they preponderate in the following subjects:—In Etiology, *mechanical, chemical, and dietetic causes of disease, defective cleanliness, ventilation, and drainage*. In Pathology, the tabular views of the elements of disease; *reflex action and sympathy; elementary changes in the blood; congestion; determination of blood; inflammation*, in its nature, manifold results, and modes of treatment; *degeneration of textures; cacoplastic and aplastic deposits*, and their treatment, with a notice of the action of the *cod-liver oil*; and the whole chapter on *Hygienics*, comprising *food, clothing, air and temperature, exercise, mental occupation, sleep, and excretion*."

The work consists of seven Chapters, with an Appendix. The first Chapter treats of Etiology, or the Causes of Disease. The older writers, as well as some moderns, were accustomed to speak of the causes of disease as *proximate* and *remote*; the former being, in fact, the pathological conditions, or essential structural changes, on which the symptoms depend. Dr. Williams discards the term *proximate*, as the subjects to which it was applied belong to the domain of pathology, and treats of the *predisposing* and *exciting* causes of disease, which are both included in the "*remote*" causes of former writers. The definition, then, of causes of disease, is, that they are "those circumstances which essentially precede it, and to the operation of which its occur-

rence is due"; more or less inconstant in their operation, and often requiring co-operation, especially of a predisposing with an exciting cause, to produce disease. Sometimes their mode of operation is such, as to lead us to doubt the propriety of the terms applied to them, especially "*predisposing*"; as when persons exposed to malaria do not suffer from it until they afterwards are subjected to fatigue or privation. The fatigue or privation is then the *determining* cause.

The PREDISPOSING CAUSES OF DISEASE are defined as "commonly consisting of various circumstances, which influence the functions or structures of the body in an unfavourable manner, yet short of actual disease." They are as follows :—1. Debilitating Influences ; 2. Excitement ; 3. Previous Disease ; 4. Present Disease ; 5. Hereditary Constitution ; 6. Temperament ; 7. Age ; 8. Sex ; 9. Occupation. An abstract of the author's remarks on a few of these must suffice.

The chief Debilitating Causes of Predisposition are :—*Imperfect nourishment*, from defect either in the quantity or quality of the food, or from incapacity of the digestive powers ; *Impure air* ; *Excessive exertion of body or mind* ; *Want of exercise, and sedentary habits generally* ; *Long continued heat* ; *Long continued cold* ; *Habitual intemperance with intoxicating liquors* ; *Depressing passions of the mind, such as fear, grief, and despondency* ; *Excessive and repeated evacuations, either of the blood, or of some secretion* ; and *Previous debilitating diseases*. These operate mainly by enfeebling the heart and impairing the tone of the arteries, the body being at the same time frequently rendered more liable to suffer, from an increased susceptibility of the nervous system.

The second class of Predisposing Causes is of a somewhat opposite character to the former, being marked by a State of Excitement or Activity. Thus, full living, without an adequate amount of exercise, may produce a redundancy of health, with more than usual capability of resisting those causes of disease which operate by depression, as cold, malaria, infection, etc. But there is a predisposition to suffer from causes of additional excitement, and any organ may be affected by such causes. Unusual vascular activity in a part, as in the kidneys from stimulating beverages, or in the brain from excessive mental exertion, is frequently a predisposing cause of disease.

Hereditary Tendency to disease is another predisposing cause, of which the instances are too well known to require enumeration. On this subject the author remarks :—"It must not be supposed that hereditary proclivity to disease commences at birth. In a few instances it is congenital ; but, in the greater number, it is developed by growth or by some other circumstances in life. Gout, for example, is acknowledged to be hereditary. A parent has it in middle or advanced life ; his son does not get it until about the same period, sooner or later, according to whether he lives freely or not. Here is something transmitted from father to son, yet not manifest in the son for forty or fifty years." (p. 16.) Hereditary tendency commences at birth, but the manifestation of the disease to which there is a predisposition, depends, to a certain extent, on some concurrent circumstances, as age, sex, food, habits of life.

The influence exerted by Age as a predisponent cause of disease, is well pointed out by the author, under the heads of *Early Infancy*, *Childhood*, *Puberty*, the *Termination of Growth*, *Adult Age*, and *Old Age*. In *Early Infancy*, the low calorific power of the body, with the scarcely adapted state of the skin, mucous membranes, and brain, to the new circumstances in which they are placed, cause a tendency to various affections of these organs. In *Childhood*, digestion and assimilation, and the excito-motory system, are more active, and hence liable to derangement. *Puberty* brings with it many morbid susceptibilities, especially in the female sex. At the *Termination of Growth*, there is a disposition in the robust to hypertrophy, hæmorrhage, and inflammation ; and in the cachectic, to morbid deposits. The diseases to

which *Adult Age* predisposes, are chiefly those which arise from habits of life. In *Old Age*, the changes in the exterior of the body show a failure of those functions which were active in youth. And "the very strength and activity which some functions retain, may, from their partiality, endanger life; and their gradual and more equal failure degrades the physical and often the mental frame of man to a lower scale of existence, until he sinks into second childhood, dotage, and imbecility." (p. 21.)

Sex gives liability to various diseases, exclusive of those appertaining to the respective generative organs. In the male sex, the muscular and voluntary excito-motory systems, with the animal passions and reasoning faculty, are in a higher state of development, and hence liable to derangement. In the female, on the other hand, the predominant bodily functions are the nutritive, the sensitive, and the involuntary excito-motory; whilst the perceptive and instinctive faculties and moral emotions predominate in the mind. The menstrual function, also, both during its continuance and on its cessation, has a considerable influence in predisposing to disease.

The EXCITING CAUSES OF DISEASE are divided by Dr. Williams into *cognizable*, consisting of "physical and mental agents, of whose existence we can take cognizance"; and *non-cognizable*, or those whose existence can be inferred only from their morbid effects. He first treats of Cognizable Causes, under the following heads.

Mechanical Causes, besides causing surgical injuries, also produce many of the diseases which have to be treated by the physician. The most common of these causes appear to be pressure and mechanical irritation. Some mechanical injuries also directly depress the vital powers.

Chemical Causes, there is little doubt, frequently act in causing disease in the alimentary canal, the controlling vital power being overcome. There appear to be at least four modes in which chemical agents may excite disease in the body:—

"*a.* As *local irritants*, as the diluted acids, alkalies, and various salts, the chemical operation of which is resisted by increased action excited in the part.

"*b.* As *corrosives*, as in the case of strong acids, alkalies, some metallic salts, chlorine, and iodine, which, by their powerful chemical affinity, so completely overcome the vital affinities of textures, as to decompose them, and thus kill and alter the conditions of the part.

"*c.* As *septics*, promoting the spontaneous decomposition of the fluids or solids of the body, in the same way that ferments or putrescent matters operate on dead organic matter.

"*d.* As *chemical alteratives*, modifying the changes which take place in digestion, assimilation, transformation of textures, secretions, etc., as in counteracting acidity by alkalies, in variously influencing the state of the blood and urine by acids, alkalies, etc.; and in causing the production of hippuric acid in that secretion, by the administration of benzoic acid (Ure)." (pp. 26-27.)

The subject of Solid and Liquid Ingesta, as exciting causes of disease, is ably discussed by the author under three heads, viz.: *a.* Non-alimentary matters acting injuriously; *b.* Aliment defective, or ill-proportioned in quality; *c.* Aliment defective, or ill-proportioned in quantity.

a. After referring briefly to the action of condiments as causes of disease, Dr. Williams notices, at more length, the subject of intoxicating liquors, and gives an outline of the morbid effects, arising chiefly from their habitual abuse. But he by no means considers that their use can be dispensed with. When taken moderately, they act often beneficially by aiding the digestion when weak, and counteracting various exhausting and depressing influences, arising from the artificial state of society. "Total abstinence, therefore, is preferable to moderation, only because it is morally easier to practise, not because it is more salutary in its physical effects." (p. 29.) Various unwholesome adulterations of food may cause disease more or less rapidly: as poisons,

salted provisions in excess, ergotted corn, lead, etc. Under this head also, Dr. Williams includes "various medicines; and that not only when injudiciously administered, but as commonly prescribed; the remedies *necessary* to cure or relieve diseases are not uncommonly *necessary evils*; they remove one disorder by inducing another, and it is well if the evil thus induced be the smaller of the two." (p. 29.)

b. Under the head of Aliment unfit in *quality*, Dr. Williams points out the necessity for a mixed diet, consisting of a due combination of organic elements. Dr. Prout has pointed out that milk is the great type of all other kinds of nourishment, as it contains albumen, oil, sugar, and water: and all combinations of food sanctioned by custom, comprise such ingredients. With regard to the formation of fat, Dr. Williams thinks it pretty certain, from the experiments of Petroz and Boussingault, and of H. Meckel, "that fat may be formed from starch or the saccharine principles, and probably from the albuminous also." The influence exerted by excess, defect, or impaired quality, of the chief alimentary matters, viz., the albuminous, the gelatinous, the oleaginous, and the saccharine or amylaceous, is next fully but concisely detailed. Of *gelatinous* foods, the author believes that, "in a healthy constitution, gelatine may assist in the formation of albumen; but when used in excess, or to the exclusion of bread and meat, it ceases to be nutritious, and the strength and flesh will waste." (p. 33.) On *amylaceous* or *starchy* foods, he remarks that "although isomeric (*i. e.* consisting of the same elements) with saccharine matter, they are not quite similar in their physiological effects. Like it, they probably sustain the body rather by supplying a material for the process of respiration, than by nourishing the textures; they thus save them from the consuming influence of the oxygen absorbed through the lungs; and, if taken in *excess*, they may either lead to the formation of fat, which is deposited in the textures, or, passing into fermentation, they may give origin to acetic, lactic, and oxalic acids, and other matters of an injurious tendency; and this latter effect occurs more from saccharine than from amylaceous food. On the alimentary canal, too, their effects in some degree differ; amylaceous food in excess impairing the action of the intestines, and the secretion of the liver, whereas sweet things often relax the bowels and cause a redundancy of bile. These different effects of saccharine matter are probably connected with its either often containing or readily forming vegetable acids, which irritate the alimentary canal, and which may become causes of dyspepsia, diarrhoea, diabetes, rheumatism, oxaluria, and other disorders of the same class. Amylaceous and saccharine matters forming the mildest materials of food, serve to digest the stronger articles, fibrin and oil, and to render them palatable and more digestible; when, therefore, the former are *deficient*, the latter are more apt to disagree and fail to impart their nutrient properties" (pp. 34-35). This property depends probably on their containing a digestible acid, in combination with an alkali which serves to counteract the acidity, naturally arising from the process of transformation. The selection of proper articles of food is well pointed out by nature, and the appetite and taste, when not perverted and pampered, generally instruct us pretty safely.

c. Aliment in *excess*, if the digestive powers be strong, and especially in persons of sedentary habits, induces plethora, and the evils attendant on that state. Both in extreme and in less degrees of *privation* of food, symptoms of vascular and nervous irritation often accompany general weakness. Long continued privation induces a state of scurvy or cachexia; and the experiments of Chossat prove, that there is a diminution of animal heat, in animals gradually starved to death. The bad effects of insufficient diet are felt much more by those who are confined in close habitations.

Excessive Bodily Exertion of various kinds, and Strong Mental Emotion or Acute Sensation, and Excessive Evacuation or Loss, either of blood or of some secretion, are severally exciting causes of disease.

Defective Evacuation of excrementitious matter is a very fertile source of

disease. The retention of the alvine and renal discharges is pernicious—especially the latter. In several cases of the early stage of the severest form of Bright's disease, in which the urine was very scantily secreted and highly albuminous, Dr. Williams has seen "typhoid symptoms of the worst character ensue, accompanied by a breaking up and partial solution of the colouring matter of the blood, with the appearance of pus globules in it; in two instances, there was effusion of a bloody purulent fluid into the joints, a day or two before death." (p. 43.) The catamenial and lacteal secretions cause disease by their retention, at first of a plethoric character, but undergoing modification, as the quality of the blood becomes altered by the continued retention of the excrementitious matters. The sudden suppression of some habitual discharge or evacuation, produces often vascular fulness, or some disorder of secretion or of the nervous system; and the suppression, or too rapid removal, of cutaneous eruptions, seems to act much in the same way.

The next subject treated of is Defective Cleanliness, Ventilation, and Drainage. In his preliminary observations, Dr. Williams remarks, that "the necessity of self-purification is illustrated by the instinctive habits of many animals and birds, which take much pains to cleanse themselves and their young, and, in many instances, carefully remove excrements from their nests and habitations. Even plants are supposed by some botanists to exhibit a like provision for preservation against self-poisoning, in the constant spreading of their roots into new soil, uncontaminated by their own excreted matter. Yet, with strange disregard of all instinctive feelings, human beings are found constantly exposing themselves to the influence of their own accumulated filth, until disease is engendered and aggravated into pestilence, and the rate of mortality is doubled or tripled in the population." (pp. 44, 45.) The injurious effects of accumulation of filth on the surface, of defective ventilation, whether from want of pure air, or from the diffusion of positively noxious gases, and of defective drainage, are described concisely, yet with that attention which the importance of the subject demands. Dr. Williams says that he has visited many houses where defective drainage, and the consequent escape of foul air, "has seemed to be a cause of illness, or impeded convalescence, in low nervous fevers, bowel complaints, influenza, neuralgia, headaches, and other ailments." The smell is not always obvious; but the effluvia may be detected by the darkening of white paint, and the rapid spoiling of meat in the lower parts of the house.

Temperature in extremes, or in sudden transitions, is one of the most common exciting causes of disease. Our space will only permit us to extract some of the author's observations on cold. Exposure to cold—especially when partial—causes disease more frequently in another way, viz., by inducing internal disorders. Dr. Williams thinks it probable, that external cold excites internal disease by deranging the circulation, especially in the capillaries; checking the external secretion, and causing congestion of the internal organs, especially those concerned in excretion. Hence arise various diseases, as rheumatism, catarrhal affections, or inflammations. This is produced more by partial but continued cold, even when the sensation of cold excited is not great. Causes of this kind, acting long on the same part, more completely constrict the vessels, check its secretions, and more surely injure the balance of the circulation. This may often be relieved, and the further progress of disease prevented, by the use of stimulants, exertion, or a hot or vapour bath. Susceptibility to the morbid effects of cold may be diminished by means which invigorate the capillary circulation, especially the sudden artificial applications of cold, as by cold bathing or sponging, followed by friction, exercise, or other means which promote healthy reaction, by which cold is naturally resisted. "The great art in usefully applying cold with these intentions, consists in using the cold in such manner and degree, and having the body in such a state before and after the application, that the reaction

or glow, which is the sign of vigour in the capillary circulation, shall be most fully produced. If, on the other hand, the cold be applied too long, or when the body is exhausted by fatigue, exertion, or other cause, or is naturally too weak, depressing effects of cold will continue, there will be little or no reaction, and the sensations of languor and chilliness show that the cold has been injurious instead of beneficial. The addition of salt to the water of baths gives it a stimulant property which promotes reaction, and a similar influence results from the force or shock with which the water is applied. This shock excites deep and forcible respirations through an impression on the incident nerves; and these are probably the efficient cause of the reaction which follows. The reaction which follows the judicious use of cold as a therapeutic agent, may prove serviceable, not only in resisting the further influence of cold, but also in removing congestions and irregularities, in the circulation from other causes, and in exciting in the capillaries and secretions new actions, which may supersede those of disease. It is thus that the 'water cure' of Priessnitz chiefly operates; and although too powerful an agent to be entrusted to unskilled or unscientific hands, it promises to become a valuable addition to the means of combating diseases, particularly of a chronic kind." (p. 55.)

The Non-cognizable Agents, which produce disease, comprise Endemic, Epidemic, and Infectious Causes.

Endemic diseases are those which may be said to dwell among the residents in particular spots, as ague and goitre. With respect to ague, it is obviously referable to *malaria* or *marsh miasma*: but the true nature of this exhalation has not been determined. Dr. Williams thinks that "the microscope, rather than chemical analysis, may be expected to discover the nature of marsh malaria." He points out the various physical causes, with respect to the sun, air, and geographical situation, which promote the influence of miasma; and notices the effects produced on the new residents in the malarious districts, and on the older inhabitants. The periodicity of attacks of ague he considers to be "probably due to the alternate accumulation of malarious influence in the blood, and the reaction of the vital powers against it." There are also other kinds of malaria, besides that which causes intermittent and remittent fevers.

Epidemic diseases, "in their affecting many persons in the same place and at the same time, resemble the endemic. But they differ in this respect, that they do not regularly return at stated seasons, nor are they confined to particular localities, although they affect some more than others; but they attack a whole district, a whole country—nay, almost a whole hemisphere—within a very short time; often coming on without obvious cause, prevailing for some time, then disappearing for an uncertain period; perhaps recurring within a few months or years, or not within the memory of man." (p. 60.) Their causes sometimes seem to depend on atmospheric influence; as is shewn by the epidemic prevalence, in certain seasons, of colds, rheumatism, diarrhoea, and dysentery. But some diseases appear at any time, without discoverable reference to season or temperature, as influenza, typhus and scarlet fevers, and other exanthemata. The influence producing these is the *epidemic*, *par excellence*; its nature is involved in obscurity. Dr. Williams next draws attention to a fact worthy of the most careful attention, but to which too little regard is often paid. It is this: that "various diseases, fevers, and inflammations, and almost all sorts of ailment, at some periods assume a remarkable character in common, or *type* (as it is called); for example, being attended with unusual weakness, or unusual excitement, or a tendency to hæmorrhage. This is what is called an *epidemic*, or *prevailing diathesis*, or constitution. Thus at uncertain times, fevers, wherever arising, and from whatever source, are more low, typhoid, or adynamic, than usual; at the same time, exanthematous diseases generally partake of the same character; and even patients affected with inflammations do not well bear the usual de-

pletions. Of late years, this constitution has more or less prevailed, and may be contrasted with a period of twenty years ago, when an inflammatory diathesis existed, and blood-letting was advantageously employed even in continued fever." (p. 61.) The mutability of the type of diseases, especially of the *poison-diseases* which occur epidemically, is a subject, the importance of which we would impress on the minds of our readers. It illustrates, perhaps more than any other thing, the necessity of principles in medicine; and its neglect has frequently led to serious errors in diagnosis and treatment. Scarcely any two epidemic visitations of the same disease, can be said to be precisely similar. Dr. Williams is somewhat in favour of the theory proposed by Linnæus, and advocated by Dr. Holland and Dr. Henle, that epidemic diseases are caused by animalcule tribes.

Infectious causes consist in the propagation of disease from one person to another. There are several different modes of infection:—

a. Infection through wounds, or an abraded surface; as in hydrophobia and cow-pox. b. Infection by contact, different parts of the body being susceptible of different diseases. c. Infection by exhalation from the breath, perspiration, or other secretion, conveyed through the air to the mouth and air-passages.

Some diseases may be propagated in several of these ways, as small-pox. Dr. Williams next observes, that the reality of aerial infection has been doubted by some. The difficulty, however, according to him, does not lie in the diffusion of infectious matter through the air, but in the fact of infection by any mode; that is, that disease should propagate its kind. The only two instances in nature which are analogous, are, the action of septic matters or ferments, and the vital power of generation. The former of these, however, having been shewn to depend on the production and growth of living molecules or vegetables, seems capable of being included in the second. Dr. Williams expresses himself on this subject with caution; and, without attempting to determine the matter, asks, "Does the matter of contagion consist of animal ova or vegetable seeds? Are infectious diseases the results of the invasions and operations of living parasites?" (p. 64.) Such a view, he thinks, may be supported by the consideration of those influences which promote or retard infection. Infectious matter is destroyed by a temperature above 120° Fahr., and by strong chemical agents; also by intense cold. Warmth, closeness, and filth, on the other hand, increase its virulence; and especially the crowding of patients, as in fever hospitals.

Two or more of the non-cognizable causes of disease frequently seem to act in conjunction; thus small-pox, scarlatina, measles, etc., are occasionally increased and modified by epidemic influences, or by endemic impurities. Their primary action is mostly depressing; and the subsequent reaction depends on the relative strength of the poison, and of the vital resisting power, as well as on the presence of certain cognizable influences, as temperature.

In the Second Chapter, Dr. Williams treats of the PRIMARY ELEMENTS OF DISEASE. The neglect of the precept, that an accurate knowledge of the functions of any organ, whether in health or disease, cannot be obtained until we have investigated the functions of its component parts, has greatly retarded the progress of pathological science. The analogy between the study of pathology and of other sciences is obvious. "The chemist, in the examination of his subjects, finds that there are some principles or elements which cannot be analyzed or divided further; these he calls ultimate or primary elements: others, again, are simple compounds, which may be analyzed; but they occur so constantly, and act so singly in compounding and giving properties to complex matter, that they are called proximate principles or secondary elements. A parallel case might be shewn of physical science. So it should be with physiology and pathology. There are the healthy and diseased *primary or ultimate elements of structure*—muscular fibre, nervous matter, vascular fibre, and the elementary tissues of membranes, glands, skin,

and other parts; and there are *primary elements, healthy and diseased*, of functions of these same structures—irritability, tonicity, nervous properties, to which may be added, because we cannot at present analyze it, the power of secretion and nutrition; and lastly, the constituents of the blood. And there are the *secondary or proximate elements* of disease, composed of the preceding primary elements, but still simple in comparison with the complex conditions of disease which they combine to produce." (pp. 67-8.) The various elements are considered under the heads of *degree*, including *excess* and *defect*; and of *kind*, relating to changes which may be expressed by the name *perversion*.

MUSCULAR IRRITABILITY—the Hallerian theory of the intrinsic nature of which is adopted by Dr. Williams, supported as it is by various experiments, especially those of Dr. John Reid—may manifest *excess* in three different ways: 1. By an excessive strength and degree, as in the violent action of the heart during exertion, and in the extraordinary power of delirious patients. 2. By an inordinate quickness or promptitude, co-existing often with want of power in the contractions; as in the irritable heart, and in lenter; but more remarkably in *convulsions* or *clonic spasms*, as in chorea, epilepsy, and convulsive hysteria. 3. By the unusual duration of the contractions, as in *tonic spasm* or *cramp*; and, in a more general but moderate form, constituting catalepsy, and in extreme cases, tetanus. The pathological causes may be either an undue or irregular supply of blood to the muscle, or irregular nervous influence or excitement; and on the nature of the causes the treatment must depend.

Muscular Contractility may be *defective* in two ways: 1. In force; as in the weakness of voluntary muscles or heart under various depressing circumstances; such as excessive exertion, or disease, or poisons, acting more or less gradually. 2. In readiness to contract; as after the irritability has been lowered by opium, or in the slow pulse caused by digitalis, lowering remedies or diet, or some cerebral affections. The cases of defective irritability clearly point out, that muscular power is much under the influence of the nervous system, though not originating from it. In paralysis, convulsive movements may be excited by mechanical irritation or electricity. The *remedial measures* vary with the cause of the defective irritability; and consist generally of rest, friction, internal stimulants, electricity, strychnia, and cantharides; and generous diet, with tonics and a healthy air, to render the blood richer in fibrin, by which the muscles are nourished.

TONICITY is a property possessed by muscular structures, and also by some others. It is a tendency to slow, moderate contraction, not essentially terminating in relaxation; but it keeps the parts in which it resides in a certain degree of tension. It performs a most important part, especially in the arteries, which it adapts to different degrees of fulness, yet maintains in their walls a degree of tension favourable to equality in the motion of the blood. It exists also in tissues which are not strictly muscular, as the veins and cutis. It is difficult to ascertain the exact limits between tonicity and irritability; but cold increases the former, and impairs the latter, though they are in general influenced by the same agents. Tonicity appears to us most nearly allied to that form of contractility, which is characterized by power rather than by readiness.

Excess of Tonicity is manifested by firmness of the muscles, hardness of the pulse, warmth of surface; but, at the same time, impeded action of the secreting organs. The vascular system is in a state of high pressure; and while there is an increased power of resistance to endemic, epidemic, or infectious influences, there is an increased liability to congestive and inflammatory disorders. The pathological causes may be excess of nourishment, a dry bracing air, tonic remedies, or the excitement of fever, etc. The *remedial measures* should be directed to the permanent relaxation of the tonic fibre; and hence warm bathing, exercise, sudorifics, aperients, and

diuretics, with moderate diet, are preferable to, or must accompany, blood-letting, which only produces temporary relief.

Defective Tonicity is often associated with excessive readiness to contract, and is often observed, after convalescence from fevers and other diseases, after the subsidence of vascular excitement. A person in this state is peculiarly liable to various diseases, being unable to resist malaria, infection, or other depressing influences. The system is, moreover, often on the verge of disease, especially congestion and its consequences. The *remedial measures* are tonics, of which Dr. Williams thinks cold, suddenly applied, one of the best. Pure bracing air, generous living, and various medicines, have also well marked tonic effects.

The diseases of SENSIBILITY may be General or Local, and may consist in *excess*, defect, or perversion. *Excessive* General Sensibility may arise from excitement of the nervous centres in the early stage of inflammation, or of determination of blood to the head: or it may be exemplified in the case of *nervous* persons. In these, there is also generally excess of irritability, and want of tone. The pathological causes may be an undue supply of blood to the posterior parts of the spinal marrow, the corpora restiformia, and the parts of the cerebral mass concerned in sensation. This may arise either from original development, or from inflammatory affections of the encephalon, irregularities in the menstrual discharge, or re-action after loss of blood. The habits of the upper classes are well calculated to foster an over-sensitive state. According to these causes, the treatment will vary, being narcotic, antiphlogistic, or tonic. On etherisation, Dr. Williams remarks, that "the operation of ether vapour is obviously narcotic, like that of opium and alcohol; and is more speedy and transient, because it passes freely and directly through the lungs into the arterial blood and affects the brain, and is as promptly dispersed by its diffusion throughout the body. It has been maintained by many, that it operates by its interference with the respiration, inducing a degree of asphyxia; but this is so far from being the case, that its best effects are produced when the respiration is steadily maintained: and it has always appeared to me that the end to be aimed at in the administration of ether-vapour, is to narcotize, so far as possible, without too much embarrassing the breathing" (pp. 81-82). He recommends the mixture of ether-vapour with oxygen gas, believing that the atmospheric air scarcely supplies a sufficient quantity of oxygen.

Defective General Sensibility in its extreme degree, is exemplified in coma from obstruction to the cerebral circulation, or from narcotic influences; or from retention of excrementitious matter, as urine. Sometimes it arises congenitally, or from disease, or age; and in such cases, it is often accompanied by defect of irritability, with much tone of fibre, and the corresponding immunities and liabilities. The remedies will be depletion and analogous measures in cases arising from fulness or obstruction; exciting measures in mere torpor; purgatives, diuretics, etc., in anæsthesia from poisons; tonics in those cases which sometimes arise from anæmia. It is doubtful whether there is any remedy capable of directly increasing this function.

Perverved General Sensibility is exemplified in the affections well known under the name of hysterical; and the remedial measures must be directed to the improvement of the supply or quality of the blood, which acts injuriously on the nervous system.

The modifications of Local Sensibility, and of General and Partial VOLUNTARY POWER, are next treated of by Dr. Williams; but we must pass on to the next subject, that of the INVOLUNTARY EXCITO-MOTOR POWERS, described by Dr. Marshall Hall. These, when in *excess*, may be accompanied by sensations, as in the spasmodic affections of hydrophobia, tetanus, and some hysterical affections; or they may be independent of sensation and volition, as in the convulsive twitching of paralysed limbs. Convulsions also may be referred to this head, as they arise from irritation of the true spinal system, either centric or ex-

centric. Partial spasms, caused by reflected irritation, are exemplified in cramp of the legs in diarrhoea and cholera, in sneezing, coughing, etc. But these only imply increased excito-motory influence, when they are out of proportion to the sensations with which they are connected. More remarkable instances are spasmodic affections of the heart and other involuntary muscular organs, frequently arising from intestinal irritation. As to the cause of inordinate reflex action, it may be, in the more partial cases, direct excitement of a small portion of the spinal and prolonged medulla, or of the incident, or excito-motory nerve, of the part affected. When the reflex action is more general or extensive, it must be referred to an erethism of the medulla, referable sometimes to an increased flow of blood, as in the early stage of inflammation of the spinal chord or its sheath, and very probably in epilepsy; sometimes to poisons, as strychnia; to mechanical irritation; to tetanus—which, apart from vascular influence, exhibits this element of nervous irritation in its most fearful form; to accumulation by rest, as in poisoning by opium, and in sleep, at which time spasmodic attacks are most frequent.

Defect of the Reflex Function is exemplified in the paralysis which affects the sphincters, and other muscles whose normal action depends on this function. When it is considerably impaired, the result will be fatal, from the interference with the actions essential to life. These actions are the last to fail; so, in recovery from partially suspended animation, they are the first to recover; hence, vomiting, coughing, and sneezing, are among the early signs of re-action. A lower degree of failure is observed in extreme debility, whether from fatigue, or from directly depressing influences. "A person in this state is *too weak to sleep*; for the medulla, partaking of the general exhaustion, cannot maintain the respiration without assistance from voluntary efforts. Hence the feeling of oppression, and the frequent sighing, which banish all repose; or if sleep do occur, it is disturbed by startings and fearful dreams, occasioned by the painful sensations of imperfect breathing." (p. 96.)

The remedies for *exalted* Excito-motory Power will consist of those for hyperæmia when present, or of sedatives or tonics. Some sedatives operate directly, as hydrocyanic acid, Indian hemp, and conium; others appear to stimulate the heart and vessels, thus equalizing the circulation, preventing determination and congestion, and thus operating as sedatives to the medullary system, as æther, ammonia, creosote, alcohol; etc., which are useful in spasmodic affections in weak subjects. Tonics seem to act indirectly, and hence gradually: and it is uncertain whether their beneficial effect is entirely exerted on the vascular system, or whether they have also a more direct influence on the nervous system. The chief remedies for *defective* reflex influence are stimulants, narcotics, and various strengthening remedies; and their beneficial effect is most marked, when they procure sleep. The remarks on the Pathology of the Nervous System are concluded with some observations on REFLECTED or SYMPATHETIC SENSATIONS.

Diseases of SECRETION are next treated of. This appears to be a vital property of the ultimate cells or molecules of secreting structures. The secreted matters seem sometimes to be formed by the secreting organs, and sometimes to be merely eliminated by them, after having been formed in the blood. In either case, the elective power of the organ is a peculiar attribute of life; and we can scarcely say more, than that secretion takes place through chemical affinities, controlled by vital agencies. This function, as well as others, is liable to be influenced by the supply of blood to the respective organs. Affections of the nervous system, and of the mind, may also modify it, but whether by altering the flow of blood, or by more directly modifying the vital property of the secreting organ, is uncertain. Secretion may be an element of disease, either by being *excessive*, *defective*, or *perverted*.

Excessive Secretion of any kind, as bile, urine, mucus, etc., besides its general debilitating influence, may produce peculiar effects, in connexion with its office and composition. These may be *forwards*, on the parts to

which the secretion goes ; and *backwards*, on the organ, and on the blood from which it is eliminated. The forward effects of *excessive* Secretion in or on a mucous membrane, are generally dependent on its stimulating properties, and may amount to a flux or profluvium ; in serous membranes or cellular texture, various dropsies may be produced. The backward effect on the organ is frequently a lowering of its vital properties, so as to induce torpidity ; and hence the secretion itself may be in time impaired in quality. Of the effects on the blood, Dr. Williams remarks : " Excessive secretions, if abounding in animal matter, may not only reduce the mass of the blood, but also affect its composition. Thus bile and urine, which differ much in composition from the blood, if separated in unusual quantities, must leave the blood modified. Urine contains a great preponderance of azote ; and its excessive formation from the principles of the blood, would leave a preponderance of hydrogen and carbon in this fluid. The bile, again, abounds in hydrocarbon, the copious removal of which would occasion a superfluity of azote. It may be objected to this statement, that, according to the opinion of some chemists, the urine and the bile are not formed from the constant elements of the blood, but from materials derived from the food, and from the decay or transformation of the tissues. To this it may be replied, that this opinion is at present no more than hypothetical ; and should it prove to be true, it would not affect the undoubted fact, that the secretions of the liver and the kidneys are intended to balance one another, and the removal of carbon from the lungs ; and that, whether the materials from which these eliminating processes are supplied, be the principles of the blood itself, or the decayed constituents of tissues, the co-operation of all these processes will be generally required, to maintain an uniformity in the composition of the circulating fluid : so, too, if one of these processes be more active than the others, the blood must suffer by the excess of those matters which the less active processes allow to accumulate in it. A clinical illustration of this position may be found in cases of bilious diarrhoea or cholera. This flux of bile is either accompanied by a highly loaded state of the urine, or by fever ; in the latter case, the fever does not subside until the urine becomes very copious, or deposits an abundant sediment. The most probable interpretation of this fact is, that the excessive secretion of bile disorders the composition of the blood ; so long as the kidneys rectify this disorder, by separating in greater abundance the solid constituents of the urine, no fever results ; but if the kidneys fail in this task, fever ensues, and continues till they accomplish it ; then a free secretion and copious deposit is symptomatic of the decline of the fever." (pp. 102-3.) The remedial measures will consist of depletion, derivation, and evacuation, in cases of congestion or determination of blood ; of astringents, in cases where it seems to depend on nervous and other sources of irritation ; and of remedies calculated to restore the balance of the secretions. In the latter case, combinations of medicines are often more useful than those which fulfil only one indication.

Defective Secretion may cause a state of plethora, general or local. Various forward effects arise from the defective secretion of bile, mucus, cerumen, saliva, or synovia ; but the most remarkable are found in the case of the excretions. " Thus, the sudden suppression of urine or bile causes typhoid symptoms, extreme depression, and coma, which speedily end in death ; and in such cases, urea, or the colouring matter of the bile, has been found in various organs. Where the suppression is incomplete, the poisoning process is more tardy ; various functional and visceral derangements are produced, such as delirium or lethargy, dyspnoea, palpitation, vomiting, diarrhoea, dropsical effusions, structural degenerations, etc., which always cause injurious effects, if the defective excretion be not restored. But the amount of these effects will depend on the extent, and especially on the suddenness of the diminution of the excretion ; and it is very remarkable, when it is gradual, how little disturbance it may for some time induce. In these gradual cases, still more remarkably

than in those of sudden suppression, some of the excrementitious matters may be detected in the blood, and in other solids and fluids of the body. Thus in some structural diseases of the liver, the colour of the bile becomes manifest, first in a yellow, and, by accumulating, in a deep greenish colour in all the textures, constituting the yellow and the black jaundice. In granular degeneration of the kidneys, in which scarcely any urea is excreted by these glands, this principle is found in the blood and in various fluids of the body." (p. 106.) In the latter kind of cases, urea has been several times detected in the blood. The excretions are often defective in fever; and this appears to be the cause of many of the constitutional symptoms which arise in their course. Fluidity and other changes in the blood seem due to this cause. The remedies for defective secretion depend often on the presence of anæmia or hyperæmia: but sometimes the organs require specific stimuli. These, however, are liable to exhaust the vital properties of the organ, hence it is frequently advantageous to alternate them, or combine them with tonics. The forward effects may be sometimes remedied by artificial substitutes.

Perverted Secretion often accompanies excess and defect, especially in the urinary and intestinal secretions. These altered secretions often become causes of disorder. The remedies are chiefly those which increase secretion; and, frequently, in cases of long continued perversion, those medicines which have obtained the name of alteratives, are indicated.

Diseases of the CONSTITUENTS of the BLOOD, in *excess*, *defect*, and *alteration*, are treated of in the following order: 1. Red Particles; 2. Fibrin and Colourless globules; 3. Albumen and other dissolved animal matters; 4. Oil; 5. Salts; 6. Water.

The subjects of *excess* and *defect* of the Red Particles, and their treatment, must be here passed over, until we come to treat of the conditions with which they are severally associated—plethora, and anemia. *Alterations* in the Red Corpuscles are evinced by changes in the colour and consistence of the blood, and in their form, as seen under the microscope. The blood has been found altered in colour and consistence, in the worst forms of scurvy, and in some malignant fevers, and in the worst forms of cachæmia from malarious influence. The staining of the blood vessels in some congestive typhoid fevers, as well as the occurrence of petechiæ and ecchymoses, and the discoloration of the skin in albuminuria, yellow fever, and some other diseases, are apparently partly due to a change in the colouring matter of the blood. The changes in the form, size, and other properties of the red particles, seem connected with the medium in which they are placed. Dr. Williams lays some stress on an excess of water in the blood, as influencing the red particles; and cites the opinion of Dr. O. Rees, that the diminution of the blood discs in albuminuria is probably due to this cause, the water being left in excess by the excretion of albumen. It seems probable to us, however, that alteration of the red particles depends, in a great measure at least, on the presence of some poison in the blood; and we are confirmed in this opinion by their being found changed in form, or destroyed, in chlorosis and in disturbed functions of the liver, with or without jaundice. After some remarks on the cause of the changes of the colour of the blood from dark to florid, on the addition of saline matter or oxygen, which Dr. Williams believes to act probably by giving increased density and distinctness to the red and colourless particles, so that they reflect light more abundantly; and on the disposition of the red particles to adhere, under certain circumstances, the author refers to a diseased state of the spleen, and disordered uterine function, as the most remarkable influences which retard their formation. The former of these causes he supposes to act by *spoiling* the blood, by its retention in a stagnant state in the diseased organ. Of the latter he remarks that "the uterine system remains congested after the repression of the discharge; and the blood in the system suffers not only from the interruption of a process of excretion,

(MM. Gay Lussac and Andral have proved it to be such), but also from a reservoir of impure blood which tends gradually to derange and contaminate the whole mass." (p. 119.)

Excess of Fibrin, constituting hyperplasma, or hyperinosis, occurs in all true inflammatory diseases, in the latter months of pregnancy, in tuberculous diseases, and in various states of atrophy and cachexia, and apparently, though not absolutely, in chlorosis. *Deficiency of Fibrin* (hypoplasma, or hypinosis) is of frequent occurrence in many diseases, and conditions bordering on disease. It may arise from impeded arterialization, or from mixture of venous with arterial blood, as in asphyxia and cyanosis. Excessive bodily fatigue more or less expends the fibrin; but it is not generally diminished in animals killed by lightning. Many poisons, and other causes of sudden death, induce often a fluid state of the blood after death, some probably from impeded respiration, as hydrocyanic acid, apoplexy, division of the pneumogastriacs; others from a more direct operation on the blood itself, as arsenic, sulphuretted hydrogen, etc.; also adynamic fevers, which arise from a peculiar poison. In the latter cases, the deficiency of fibrin may be a chief cause of the hæmorrhages, petechiæ, and vibices, which sometimes occur. Dr. Williams does not think it probable, that the hypoplastic state of the blood in scurvy is due to salted food. Such a condition causes a tendency to hæmorrhages, and a retardation of the reparative process after injuries; and there can be little doubt, that various irregularities in the circulation and distribution of the blood are also due to a deficiency of Fibrin. Alterations in the *quality* of the Fibrin introduce to our notice the important appearances presented by the buffy coat, and by the contraction of the clot of blood. The causes influencing severally coagulation, contraction, and separation of fibrin from the red particles, are noticed by the author. These, as is well known, may be influenced by the rapidity with which the blood is drawn, and the shape of the vessel into which it is received. As to the contraction and cupping of the clot, Dr. Williams remarks that "being due to the fibrin, it might be expected to be in proportion to its quantity; and this is the case in inflammatory diseases. But there is also great contraction, and often cupping, in chlorosis and some analogous states, in which the fibrin is not absolutely increased; the red particles being much diminished, the contractile property of the fibrin is not impeded. . . On the other hand, there is little or no contraction, where the red particles are in proportionate abundance, as in sanguineous plethora, or where the aggregation of the fibrin is impaired by the addition of saline matter. In a boy under my care with purpura, Dr. Garrod found the fibrin in the blood quite as abundant as usual, amounting to 3 in 1000 parts; but it was remarkably defective in the usual contractile property; and the salts of the blood were in excess." (p. 126.) The separation of the fibrin from the red particles may be favoured by four circumstances:—1, the tardy coagulation of the fibrin, giving more room for the separation; 2, increased specific gravity of the red particles; 3, diminished specific gravity of the fibrin; 4, diminished spissitude of the liquor sanguinis. But these alone are not sufficient to account for all the phenomena observed; and we may adopt the idea of Dr. H. Nasse and Mr. Wharton Jones, supported by the observations of Mr. Gulliver, that the separation of the red particles of inflammatory blood is due to their increased tendency to form piles or rouleaux. The increased lightness of the buffy coat, apparently due to an increase of fat globules, contained chiefly in the pale corpuscles scattered through it, must also be taken into account.

The increase of fibrin in inflammatory diseases might at first be supposed due to the acceleration of the circulation and respiration; but these are not always in proportion. It is more probable that the increase of fibrin during inflammation has its origin in the vessels of the inflamed part. The formation of fibrin, as well as its power of coagulation in the blood, is favoured by two circumstances, the presence of the pale corpuscles or of their constituent

granules, and the formation of the deutoxide of protein by some oxygenating process acting on the albumen. This oxygenating process commences in the mesenteric glands, and a further supply is obtained in the lungs; but the perfection of the organizability of fibrin appears dependent on vital changes. The fibrin may vary in its capacity for the nutritive process, irrespective of its quantity; being *euplastic*, *cacoplastic*, or *aplastic*. In scrofulous and tuberculous subjects, the fibrin, though abundant, commonly exhibits a predominance of granular matter and fat globules, as if it were imperfectly elaborated. The red particles are, in such cases, deficient in number, and this suggests a probable cause of the imperfection of the plasma.

In the treatment of hyperinosis, blood-letting and low diet are the chief means of reducing the fibrin, which; however, they affect less than the red particles. Mercury, alkaline salts, iodine, and antimony, are useful, as well as purgatives, and means to increase much the more solid secretions. According to the views of Dumas and Liebig, the saccharine, amylaceous, or gelatinous forms of food, must reduce the fibrin and albumen of the blood; and this is in consonance with experience, these being the best in inflammatory diseases. Bodily exercise may be employed advantageously, in sthenic plethora and scrofulous hyperinosis. The retardation of the formation of fibrin, by lowering the activity of the respiration, by narcotics or other remedies, is worthy of further research. The fibrin has been found reduced in quantity in a phthisical patient, by Simon, after taking cod-liver oil.

Hypinosis is to be remedied by assisting the assimilative functions, by diet abounding in protein compounds, tonics, and pure air; and by avoiding the expenditure of fibrin by over-exercise and other exhausting processes. When it arises from a septic poison, no means can be efficacious, so long as the poison remains in the system.

Very little is known of the power of remedies to correct changes in the quality of the fibrin. The properties manifested by the buffy coat in inflammation, though at first reduced by blood-letting, often soon return. The plasticity of fibrin may be lowered in cases of local inflammation, by blood-letting and other antiphlogistic remedies, even if they do not remove it at once. When there is any tendency of this kind, it should be an indication to improve the general condition of the blood by a tonic and nutritive plan, at the same time that local antiphlogistic measures may be necessary. A similar tonic treatment is still more indicated in scrofulous, chlorotic, and other cachectic states, in which there is an excess of ill-elaborated fibrin. It may also be desirable to use remedies which keep the fibrin dissolved, so as to prevent its deposit in the aplastic forms. Alkalies and iodide of potassium are useful; but more is to be expected from dietetic and regiminal means, which secure the most nutritive food, and promote the organic functions by pure air, exercise, frictions, and suitable medicines.

We must pass over the sections on Albumen, Oil, Saline Matter, and Water, and notice shortly the CHANGES IN THE BLOOD BY RESPIRATION. It is doubtful whether these ever occur in *excess*; for, by an admirable adaptation, the activity of respiration is in proportion to the rapidity of the circulation, and to the need of change in the blood.

Defect of the Changes of the Blood in Respiration varies in its effects, according to its sudden or gradual supervention; an acute attack of the organs of respiration being capable of proving fatal, by an impediment to the breathing much smaller than that which occurs in many chronic diseases, as emphysema, but is more gradual. "The cause of this difference is not merely the general fact that sudden changes produce more effect than slow changes, but it lies chiefly in the fact that the importance of the respiratory functions varies under different circumstances. When the several parts of the body, especially the muscular, are in a state of full activity, more breath is needed to remove from the blood the noxious effete matter, which always results from

functional exercise. Hence in such a condition (which is that of healthy action) the respiratory process cannot be abridged without serious disorder. This disorder is first obvious in the increasing feelings of oppression and suffocation which the want of breath causes, and which excite forced exertions to breathe. If these exertions still fail to duly aerate the blood, it is partly arrested in the lungs, right compartments of the heart, and partly passes, in an imperfectly arterial state, to the left side of the heart and arteries. The phenomena of asphyxia are thus compounded of—1. Accumulation of blood in the venous system; 2. Diminution of blood in the arterial system; and, 3. Deficiency of oxygen and excess of carbonic acid in the blood. These several conditions cause injury to the vital functions, both by the want of a due supply of blood, and by the bad quality of that blood, which is injurious,—negatively for want of oxygen, the proper exciting agent, and positively from its excess of carbonic acid and other excrementitious matters which are sedative. The symptoms induced are also of two classes—1. Those implying failure of function, such as muscular debility, feeble action of the heart, pallor and coldness of the surface and extremities, and abolition of the senses and mental faculties; and, 2. Those arising from congestion and the noxious influence of the black blood, such as palpitation, flashes in the eyes, noises in the ears, delirium, muscular spasms, etc. Each of these sets of symptoms may predominate in different cases, and this causes a variety in the phenomena of asphyxia, which has not been sufficiently noticed by writers on this subject.” (pp. 143-4.) An amount of defect in the respiratory changes may be gradually induced, which would be rapidly fatal under common circumstances. This is especially observed in cyanosis, and in such cases as emphysema. In these cases, also, the muscles are generally weak, and frequently subject to deposition of fat, which seems in accordance with Liebig’s view that respiration directly consumes the oily parts of the blood.

In the treatment of defective respiration, besides the obvious indications of restoring it, means are to be used for lowering the activity, and hence equalizing the functions. Such remedies are perfect rest, warmth to the surface and extremities, pure and cool air; also various sedatives, which, by reducing the circulation and other functions, diminish the want of breath. Ether, stramonium, lobelia, etc., probably act in dyspnoea by relieving spasm. In extreme cases, the enfeebled circulation may require stimulants; and the experiments of Chossat, Erichsen, and others, and the experience of the officers of the Royal Humane Society, have proved that none is more efficacious than heat to the whole body, especially the warm bath; warm frictions and stimulating applications are also very useful. It is uncertain whether we possess any means of arterializing the blood by any other process than that of respiration; but the internal administration or injection into the veins of saline and other matters holding much oxygen in loose combination, as the chlorates, nitrates, and some peroxides, is a subject deserving of further inquiry. The removal of carbonic acid,—an office which these would leave undone,—might possibly be accomplished by the administration of free alkalis. Dr. Williams thinks he has seen benefit in asphyxia by carbonic acid gas, from the use of liquor potassæ with chlorate of potash. Warm baths and frictions with these matters might also be serviceable. Another indication in imperfection of the respiratory process, is to remove the congestions which take place in internal organs; and the best remedies for such cases are mercurials and others which act on the secretions, which probably act by making the liver assist in decarbonizing the blood. When the respiration has become gradually defective from disease, food containing much hydro-carbon, as fat or spirits, is contraindicated; lean meat and other fibrinous articles, with farinacea and acid fruits, should form the chief sustenance.

CHANGES IN THE BLOOD BY EXCRETION form the subject of the next section. The effects of defective excretion of urine and bile having been already referred to, under the head of Defective Secretion, it will be unnecessary to re-

fer further to the remarks of Dr. Williams on these subjects, than to state that the principles of both these secretions have been found in the blood, in disease. The *perspiratory* secretion contains lactic acid and lactates, arising chiefly from the decay of the muscular texture. When perspiration is checked by external cold, these may be retained in the blood, producing rheumatism, urinary disorders, or various cutaneous diseases. Such cases are frequently remarkable for the acidity of the cutaneous and renal excretions. In low forms of rheumatism, such as the neuralgic, the *materies morbi* is probably oxalic acid. The remedies for diseases arising from defective excretion should be not merely antiphlogistic (when such are indicated), but eliminative. For this purpose, sudorifics may suffice in slight cases of rheumatism; but, in others, the kidneys and liver should be excited by various combinations of colchicum and alkalies with mercury, opium, and iodide of potassium. In the asthenic form, and especially in neuralgic rheumatism, tonic remedies are indicated.

CHANGES IN THE BLOOD FROM THE TRANSFORMATION OF CHYLE AND OF THE TEXTURES have not been sufficiently examined, to afford any certain data; but we may connect with them the pathology of *gout* and other *lithic acid diseases*, *diabetes*, both *saccharine* and *ureal*, and *obesity*.

Gout, and the commonest kinds of urinary gravel, are now generally considered to depend on an excess of lithic acid; and this seems confirmed by an observation of Dr. Garrod, who detected this acid in the blood of a patient suffering from chronic gout; it being at the same time absent from the urine. This acid is generally produced in those, who take a large proportion of animal food, and whose digestive and assimilative functions are impaired; it probably results also from the decay of the textures, especially in febrile or inflammatory irritation. The effects of an excess of lithic acid vary. The kidneys sometimes suffer from irritation, hence nephralgia and nephritis may occur; or the water and alkalies secreted with it may be insufficient to hold it in solution, hence crystallized sand or gravel, or calculus. But the kidneys may fail in their power of elimination; and the lithic acid and its compounds, being retained in the blood, produce gout.

Saccharine Diabetes is correctly regarded by Dr. Williams, in common with several other pathologists, as arising from disorder of digestion and assimilation, the state of the urine being merely a consequence. Sugar has been found in the blood of diabetic patients; and it has also been proved to be formed in unusual quantities, during the process of digestion. "The facility with which, in the laboratory, starch and gum can be converted into sugar, throws much light on the origin of sugar in diabetes; and the actual presence of a very large amount of acid in the stomach of diabetic patients, confirms this mode of explanation. But it is probably not only formed from isomeric principles in the food, such as starch and gum, but in confirmed cases it is also derived from a decay of the textures, especially the gelatinous, by a modification of the process in which urea is naturally evolved, as it has been found practicable to convert gelatine partially into glucocoll, which has saccharine properties, and probably consists of sugar and urea. As there is saccharine matter naturally in chyle, (and even in blood, for a short time after the chyle is added to it,) it might be supposed that there is, in incipient diabetes, an exaggeration of the process by which saccharine matter is formed; and this is countenanced by the fact ascertained by Bouchardat, that the sugar in the blood of diabetic patients is at its maximum during the process of chylofication, and that it almost disappears after a long fast. It is therefore probable, that the atrophy and cachexia accompanying the disease, result from the draining away of the nourishment of the body *with* the excess of sugar, rather than the conversion of all this nourishment *into* sugar. It is now well ascertained, that the ordinary animal constituents of the urine are not only present, but are often increased considerably beyond their natural amount." (pp. 156-7.)

The indications of *treatment* in gout and diabetes are parallel, though the means for their fulfilment are most opposite, especially as regards the diet.

In both cases, there seems to be an unusual development of acidity in the system ; and in both, alkalies have been found useful,—soda and potass in gout, to assist in the elimination of lithic acid, and ammonia or magnesia, or the alkaline phosphate of soda, in diabetes. In both gout and diabetes, benefit seems often derived from tonics.

The formation and excretion of urea is sometimes increased, without being explicable by any obvious excitement of the respiratory functions, as in the *diabetes ureosus* of Dr. Prout. It also occurs sometimes in typhoid fevers, with great loss of flesh and strength. Urea has been found increased in the urine of some patients with acute rheumatism and delirium tremens, at the decline of the fever ; but this was perhaps from a removal of that which had been accumulating. The treatment of excessive formation of urea consist in avoidance of great bodily or mental exertion, generous diet, and tonics ; opium and other narcotics are also found useful in reducing the urine, in diabetes ureosus.

Independently of an excessive deposition of Fat, constituting obesity, its excessive production sometimes occurs as an error in assimilation. It may then interfere with the production of the animal principles requisite for the nourishment of the textures, and, by being substituted for them in the textures, produce their degeneration. In the last number of this JOURNAL, we gave an abstract of the observations of Mr. Hallett on the adipification of muscle, and referred to the lectures of Mr. Paget on the subject of fatty degeneration. Mr. Gulliver (*Medical Gazette*, June 1843,) has shewn the atheromatous patches in arteries to be of this nature, and has also found a predominance of fatty matter in the lungs, the kidneys, and testicles, under various chronic diseases. Dr. Williams, and Dr. R. Quain, as well as others, have also observed an abundance of fat in the kidneys, liver, and other structures, in persons in whom general cachexia had been induced by intemperate habits.

CHANGED PROPERTIES OF THE BLOOD FROM THE PRESENCE OF FOREIGN MATTERS are evidenced in cases of morbid poisons. Various authors notice the production of typhoid symptoms, from the introduction into the blood of matter from diseased subjects ; and not only from actual introduction, but even from contact, or from smell. There is good reason to suppose that purulent matter, and the germs of carcinoma and other malignant diseases, are spread through the system by means of the blood. The tendency to symmetrical distribution in certain local affections has been adduced by Dr. W. Budd as a proof of this.

The *treatment* of this element comprehends two indications ; 1, To counteract the injurious operation of the poisonous matters ; 2, To expel them from the system. To fulfil the first of these, we give stimulants in adynamic fevers and cases of sedative poisoning ; anti-periodic tonics in ague ; opium in irritation. The other indication is more generally pursued ; and the propriety of assisting the excretory functions, especially those of the kidneys and alimentary canal, is pointed out by the frequent salutary occurrence of diarrhœa, diuresis, or perspiration in fevers, and by the energy with which poisons in general operate on those, whose excreting functions are much impaired.

To be continued.

THE UNDERCLIFF OF THE ISLE OF WIGHT : ITS CLIMATE, HISTORY, AND NATURAL PRODUCTIONS. By GEORGE A. MARTIN, M.D. pp. 366. London : 1849.

A very sensible, well-written account of everything that concerns that favoured portion of the island. It has the merit of affording to the invalid much valuable information respecting the climate, temperature, and accommodation there to be found. In addition, there is an elaborate description of the zoology, botany, geology, and hydrology of the island, which will be invaluable to those who would willingly divert their thoughts from their own cares and sufferings, by studying the great book of Nature. The hygienic remarks are full of sound good sense, and the work cannot fail to be popular.

LECTURES ON THE PARTS CONCERNED IN THE OPERATIONS ON THE EYE, AND ON THE STRUCTURE OF THE RETINA, delivered at the Royal Ophthalmic Hospital, Moorfields, June 1847; to which are added, a paper on the Vitreous Humor, and also a few cases of Ophthalmic disease. By WILLIAM BOWMAN, F.R.S. pp. 143. London: 1849.

It has seldom been our good fortune to meet with a work possessing more sterling merit, than the unpretending volume now before us. That modesty accompanies merit, is generally acknowledged; and in nothing is this more conspicuous than in literary productions. Some of these are ushered into existence with all the pomp and circumstance of newspaper puffs, fine paper, grand illustrations, and rejoice in fair clothing of purple and gold: and yet how often do they disappoint our expectations!—how often does the gay mantle conceal the nakedness of vanity, ignorance, declamation, or error! Other works modestly appear, with no other recommendation than is afforded by their contents. It is these latter whose acquaintance we are glad to make, and of them is the volume on which we now proceed to comment.

The author, having taken a general view of the Eyeball, proceeds to describe the Structure and Relations of the various parts composing it; and, as there are many points on which he has thrown light, we propose to consider them *seriatim*.

The first which strikes us, is the mode in which the tendons of the recti muscles are implanted into the sclerotica. It is commonly taught, that these, having joined side by side, spread out as a kind of external investment to the front of the sclerotica. The investigations of MR. BOWMAN, however, shew that these tendons are truly implanted into the sclerotica, penetrating and proceeding forwards in the middle of its substance, and leaving its outer layer exposed under the conjunctiva; thus it is the true sclerotica, and not the expanded tendons, which is visible as the white of the eye. From the above arrangement of the tendons, results a practical point. The recti groove the sclerotica before entering it, and render it very thin; and it is at those spots that abscesses of the eyeball are most prone to burst.

The cornea is described by Mr. Bowman, as consisting of the following parts: a lamellated tissue, or *cornea proper*, which constitutes the chief bulk of the membrane; in front of it is an *anterior elastic lamina*, on which rests the *conjunctival epithelium*, and behind it the *posterior elastic lamina*, supporting the epithelium of the aqueous humor. The lamellæ of the cornea proper are more than sixty in number, formed of fibres interlacing, and leaving interspaces, which Mr. Bowman was the first to describe; they are of a tubular form and lie in superposed planes, the contiguous tubes of the same plane being for the most part parallel, but crossing those of the neighbouring planes at an angle, and seldom communicating with them. In the eye of the ox, there is not much difficulty in making a successful injection of these tubes with mercury, or even with size and vermilion; but in the human subject it is far more difficult, although Mr. Bowman has seen a tubular arrangement of the interstices here also. Mr. Bowman supposes, and with good reason, that the use of these tubes is to facilitate the permeation of the thick non-vascular cornea, by the fluid portions of the blood, which alone have access to it.

The *anterior elastic lamina* is described as a continuous sheet of homogeneous membrane, perfectly transparent and glossy, and not influenced by acids; in the human eye, its thickness is about 1-1200th of an inch, and to it is due the smooth glistening surface exposed by scraping off the conjunctival epithelium. We agree with the author, that the existence of this elastic membrane will help to explain the tenacity, with which particles of steel adhere to the cornea, although apparently only resting on its surface. Those who have attempted to remove them, can alone form an idea of the firmness of the adhesion. Mr. Bowman alludes to the severity of the pain caused by scraping the cornea, to which we can bear testimony, having on two occasions been unlucky enough to have particles of grit stick in the cornea of our right

eye; and the amount of pain, caused by their removal with a cataract needle, far exceeded what might have been expected. Those troublesome little collections of fluid, called *phlyctenulae*, are supposed by the author to have their seat immediately under the elastic lamina.

We now come to a portion of the subject of more than ordinary interest, as we think it sets at rest a *vexata questio*. A variety of opinions has existed, as to the mechanism by which the adjustment of the eye to distance is effected. Some physiologists have referred it to the action of the ciliary processes, others have thought it caused by an altered convexity of the lens, the result of a muscular movement of its fibres, others again have been of opinion that it was produced by a change of the radius of curvature of the cornea, whilst some have regarded the ciliary zone as the instrument, by which the alteration took place. The last were nearest the truth, but they saw it dimly. The nature of the ciliary circle or zone itself has given rise to difference of opinion; some authorities having described it as a nervous ganglion, others as mere cellular tissue; whilst a few, including the acute Porterfield, have stated it to be muscular. It was reserved for Mr. Bowman, to place beyond doubt the correctness of the latter view. "If," says he, "we examine with a high microscopic power the texture of this part, we discover a fibrous arrangement in the same direction, which would be more obvious, if the fibres were more separate from one another than they really are. The fibres are then seen to be loaded with roundish or oval nuclei, often precisely similar to those of the best marked examples of the unstriated muscle. Lastly, the vessels of the ciliary muscle resemble those of unstriated muscle in abundance and arrangement, and indicate, in the most decided manner, the backward direction of the fibres, from their origin at the junction of the cornea and sclerotica, towards the anterior region of the choroid." (p. 53.) The fibres of the muscle have their origin from the fibrous tissue, coming from the posterior elastic lamina. "The fibrous tissue passes in a sheet backwards to the anterior region of the ciliary processes, and gives origin on its outer surface, or that turned from the anterior chamber, to the fibres of the ciliary muscle, which then clothe the outer surface of the choroid for about one-eighth or one-tenth of an inch, as far as opposite to the ora serrata." (p. 21.) When it is borne in mind, that this muscle has its fixed attachment as much as possible in front of the lens, that it is inserted into the anterior eighth of an inch of the choroid, which is here tougher and firmer than elsewhere, and that it is connected in a special manner with the lens by the ciliary processes, through the medium of a firm tough membrane, and of a strong elastic fibrous membrane proceeding from it nearly to the margin of the lens,—it is difficult to arrive at any other conclusion, than that this is the medium by which the adjustment of the eye to distance is effected.

An elaborate account is given of the structure of the crystalline lens and its capsule, with many valuable remarks on its morbid changes. In comparing the fibres of the human foetal and adult lens, Mr. Bowman has noticed "that as development proceeds, and the lens becomes wider and flatter, the central planes extend themselves further and further from the axis, and at the same time branch again and again, so as to multiply the segments, into which they divide the lens." (p. 68.) The conclusion drawn from this is, that the multiplication of the mesial planes outwards is a process necessary to the expansion and flattening of the organ, and that it takes place by the deposition of new fibres on the old. A difference of opinion has ever existed as to the precise nature of the liquor Morgagni; some inclining to the belief that it is a natural secretion; others regarding it as the result of disease; whilst a third party have considered it to be merely a post-mortem change. Mr. Bowman is decidedly of opinion that there is no such fluid in the healthy lens; and that when it is found in the cataractous lens, or with the clear lens after death, it is caused by the destruction of the layer of cells which separates, in the living and healthy eye, the capsule from the superficial fibres of the lens. In this opinion we coincide, from observations of our own.

We now pass on to a consideration of the retina, the description of which is regarded by us as the most accurate and most complete which has fallen under our notice.

The elements common to the retina, with other parts of the nervous system, are placed towards its hyaloid surface, and are *gray fibres*, continuations of the nerve tubules of the optic nerve, *gray nervous matter* similar to the cineritious part of the cerebrum, *caudate nucleated globules*, and *agglomerated globules* allied to the nuclei of cells. The elements peculiar to the retina form the external membrane called "Jacob's membrane," and are *columnar rods*, arranged vertically in a single series, and bulbous particles scattered at regular intervals among them. The total absence of nerve tubules in the retina is an interesting point; if a proper section be made, it will be seen that the optic nerve, white in the greatest part of its course,—that is, so long as the tubules have their proper investment of white substance,—becomes gray and semitransparent ere it reaches the retina, and the retina itself never has the white glistening aspect of nerves. This arises from the loss of the investment of white matter, the central fibres remaining, and passing forward to become the gray fibres of the retina. The gray fibres may be seen in the fresh human retina, by looking directly on the inner surface, near the optic nerve, with a power of fifty diameters; they will be seen in bundles of different sizes, anastomosing to form very elongated meshes, in which large nucleated vesicles soon begin to appear. The caudate nucleated vesicles are, we believe, first described by Mr. Bowman; they are in many respects very singular, but their use is at present matter of conjecture. The agglomerated granules form about a third of the entire thickness of the retina, and are disposed in two layers between which, we are informed, exists a thin layer exhibiting neither globules nor any distinct texture. Our space will not admit of our following the author through his remarks on the nature of the *foramen of Soemmering*; but we may observe, that he regards the fold of the retina, described by many authors, as a false appearance, and he has seen in the centre of the yellow spot a minute dot, like a foramen, but a positive opinion is not expressed as to its character.

Until very recently, the vitreous humour was supposed to consist of delicate filamentous tissue, so interlaced as to form cellular spaces, in which the fluid was supposed to be contained. Pappenheim, however, in 1842, announced that the vitreous body, when treated with a solution of carbonate of potass, exhibited a series of layers, like those of an onion. In 1843, Brücke pursued these inquiries, and also arrived at the conclusion, that the vitreous body is made up of concentric laminae, enclosed one within another. Hannover likewise devoted much time to the inquiry; and announced that, although in the cat, dog, ox, and sheep, the concentric laminae existed, yet in man the humour was composed of segments, like those of an orange. At this point, the investigation was taken up by Mr. Bowman, who submitted the vitreous body to the action of chromic acid, and of diacetate of lead, and also froze it. The following are the conclusions at which he has arrived, from his careful experiments. "If I may venture to deduce a conclusion from the experiments I have detailed, I would say that the construction he (Brücke) has described, is not in the least supported by the experiments with the salt of lead, which may be made to indicate a lamination in any direction at the pleasure of the anatomist; but, nevertheless, there remains good reason for supposing that there do exist certain layers in the vitreous substance, capable of being rendered visible by art." (p. 107.)

We must now bring our notice to a conclusion, not because the subject is exhausted, but because our space is limited. There are many valuable remarks on the Morbid Anatomy of the Eye, illustrated by cases; but for these, and for much useful information, we must refer to the book itself, which is regarded by us as a valuable addition to ophthalmic literature.

A TREATISE ON THE CURE OF ULCERS BY FUMIGATION. By GEORGE ALFRED WALKER, Surgeon. pp. 112. London: 1847.

There are few diseases more perplexing than Ulcers, from the obstinacy with which they at times set at defiance the means adopted for their cure. Hence result the number of publications, that have been devoted to the subject; scarcely a year passing without the appearance of several works, most of them professing to have cut the gordian knot, and asserting with confidence that the plan recommended is certain of success. The object of the volume before us, is to place before the profession a plan of treatment, not novel in principle, but in some respects new as regards the mode of application. This treatment consists in exposing the ulcer and adjacent parts to the fumes of sulphur and iodine, volatilized by heat; and it is from the combined influence of iodine, sulphur, and temperature, that a healthy action is to be expected in the diseased parts. That the author is well satisfied with his success, is shown by the following passage. "It is now many years since I first tested these powers, and my experience enables me to assert that this new mode of treatment, where properly directed and perseveringly applied, is not only superior to any other with which I am acquainted, but absolutely capable of mastering, in a short time, almost any case of ulcer fairly submitted to it." (p. 81.) The apparatus used is described as exceedingly simple, but to us it seems rather complicated; and very many points have to be attended to, in the management of each case. There is one allusion to which we would draw the attention of the author, in order that it may be corrected in another edition, namely, the reference at page 65 to "the engine-room of my establishment." We feel sure that it was not intended as a puff, but it might leave an unfavourable impression on the minds of some persons.

In very obstinate cases, this plan of Mr. Walker would be worthy of a trial.

CHINA AND THE CHINESE. By HENRY CHARLES SIRR, M.A., Barrister-at-Law. In 2 vols. London: 1849.

We do not, as a general rule, profess to notice non-professional works; but we are induced to make an exception in favour of that before us, from its containing much curious information respecting the knowledge of anatomy and surgery, possessed by the Chinese. The general opinion entertained as to their ignorance of the structure and functions of the human body, is fully confirmed by Mr. SIRR, who gives the following example of Chinese semeiology:—"If the pupil of the eye be of a white colour, then the disease lies in the lungs; if red, then it lies in the heart; if yellow, in the spleen; if green, in the gall; if black, in the kidneys; but if the whole eye be of a yellow colour, that can neither be described nor named, then the cause of the disease lies in the middle of the chest." (Vol. ii, p. 81.)

The following mode of treatment of dislocations of the spine, will probably be new to many of our readers:—"The Chinese have invented a back of fir wood, which is thickly padded with cotton; this is attached to the back of the patient by bandages, which pass over the shoulders and round the body. Previous to the application of this stay, the sufferer is made to lie down upon his face; the assistant places his feet upon the patient's shoulders, whilst the surgeon, by means of a roller of cotton, raises that part of the spine where the injury has been received, and by a series of pressures, applied in different directions and in varying degrees, re-adjusts the displaced bones. The artificial back is then securely fastened on the person, being worn constantly, until the parts have regained their healthy condition." (Vol. ii, p. 71.)

We regret that the great demands upon our space prevent our making other extracts from these entertaining volumes, which, however, we cordially recommend to our readers, as containing a vast amount of information on every subject relating to China.

LECTURES ON THE CAUSES AND TREATMENT OF ULCERS OF THE LOWER EXTREMITY, delivered at the London Hospital during the Summer of 1848. By GEORGE CRITCHETT, Esq., F.R.C.S., Surgeon to the Royal London Ophthalmic Hospital, etc. pp. 121. London: 1849.

This is a very sensible work, founded on sound practical knowledge. The treatment especially recommended, is that of affording support to the diseased limb, and inducing healthy action in the Ulcers, by well-adjusted strapping. Mr. CRITCHETT points out the conditions, in which this proceeding cannot be used with propriety; and we agree with him as to the advantage of modifying the treatment, according to the peculiarities of each case. His observations on the management of irritable ulcers are just; the recumbent posture, the inclined plane, and soothing applications are here indicated, and of these latter, "poultices of various kinds (though it is the fashion for Young Surgery to condemn them wholesale), often afford relief when all else fails to do so, and are still, I am convinced—in spite of the obloquy and ridicule now cast upon them by the modern school—by far the best method of obtaining uniform warmth and moisture to an inflamed surface." We think with the author, that poultices by no means deserve the contempt with which the advocates of more elegant, and we may add, more expensive appliances, regard them; if well made, and renewed at proper intervals, they are most useful and most comfortable applications.

Mr. Critchett differs from Mr. Skey, as to the benefit derived from the use of opium in the treatment of ulcers; having used it in above forty cases, he has arrived at the conclusion, "that it is utterly valueless as a healing agent, in the treatment of ulcers of the lower limb." In fact, there is no one remedy which is applicable to all cases; each case requires careful study, and general and local remedies, modified according to the state of the general health, and the variety of causes which exert an influence upon these troublesome companions.

There is one point on which we are compelled to animadvert; and that is, the impropriety of publishing the names and addresses of patients. It surely was unnecessary to make the world acquainted with the fact—that "Mrs. Dowding, who keeps a circulating library in Cannon-street, Commercial-road," had suffered from a foul ulcer; or that "Thomas Kedzlie, residing at 10, Paul's-alley, Cripplegate," came to Mr. Critchett, with a note from his friend and former teacher, Dr. Cobb, and four ulcers on his right leg into the bargain. This is straining accuracy too far, and in our opinion, is decidedly objectionable.

With this exception, we can speak in high terms of Mr. Critchett's little volume, which shows a thorough acquaintance with the subject of which it treats, and is likely to be extremely useful.

A PRACTICAL TREATISE ON MORBUS COXARIUS, OR HIP-JOINT DISEASE. By WILLIAM C. HUGMAN, M.R.C.S., Surgeon to the Verral Institution for the Treatment of Spinal Disease, etc.

The object of this work is to prove the advantages derivable, in disease of the Hip-Joint, from perfect quiet in the prone position, that is, with the face downwards. A full account is given of the apparatus, by which the object is attained; and, as we agree with the author, that absolute freedom from motion of the joint is a great desideratum in such cases, the means by which this can be accomplished is a matter of much importance. We cannot compliment the author on the artistic skill, with which the illustrations are executed, for they are indeed curiosities in their way; the patient on the apparatus looks anything but comfortable. If we had our choice of long confinement, we would rather lie on our back than on our face; and the young lady in Plate III looks as if she would be of the same opinion.

The Verral Institution to which the author is surgeon, is, we perceive, for the relief of spinal distortions; and this leads us to remark that, in our opi-

nion, such deformities would be far less frequent, were *fencing* more generally the fashion. The attitudes assumed in fencing improve the carriage of the body, give it just poise and balance, strengthen the muscles of the back and loins, and directly expand the chest. We know of more than one case of lateral curvature removed, whilst under the tuition of that able *artiste*, M. Léon Gillemand; and there is no reason whatever why ladies, as well as gentlemen, should not be instructed in so graceful and invigorating an exercise as the use of the foils.

ERUPTIONS OF THE FACE, HEAD, HANDS, ETC., WITH THE LATEST IMPROVEMENTS IN THE TREATMENT OF DISEASES OF THE SKIN. Illustrated with coloured plates. By T. H. BURGESS, M.D., Editor and Translator of *Cazenave's Manual of Diseases of the Skin*. pp. 254. London: 1849.

Dr. BURGESS is already favourably known to the profession as the editor of Cazenave's excellent manual. The present original work is a highly practical, and therefore a very valuable contribution to the Pathology and Treatment of Skin Diseases.

The idea of describing the different diseases in groups, or regions, is a good one, and, for practical purposes, has considerable advantages over the more ostentatious systems of classification, which ever vary as knowledge advances, or opinions change. Certain affections shew a predilection for certain regions: thus, Acne, Sycosis, and Lupus, are almost peculiar to the face; Eczema, Scabies, and Psoriasis, infest the hands; and all Skin Diseases become modified in character, when they manifest themselves on the head or other parts covered with hair. As the number of cutaneous diseases occurring in certain regions is limited, a cursory glance at the notices belonging to any region or group would always bring the inquirer to the particular description. The common cutaneous affections of the head and hands are about six or eight in number, and those of the hands do not exceed a dozen.

The slighter affections Dr. Burgess judiciously speaks of with great brevity, that he may have ampler room to bestow on the more troublesome and more serious maladies: such as Acne in women, Favus in children, Eczema, Impetigo, and the Syphiloid eruptions. The plates are faithful transcripts from life; and the whole tone of the book is that which candid and patient clinical study can alone impart.

Dr. Burgess does not adopt the vegetable theory of Favus maintained by two eminent pathologists, Drs. Gruby of Vienna, and Hughes Bennett of Edinburgh. This is rather bold, after the chastisement inflicted on Mr. Erasmus Wilson by a northern reviewer for similar incredulity. "We beg him" (Mr. E. Wilson), said *The Edinburgh Monthly Journal*, "to pay more attention to the labours of his contemporaries, and to avoid insulting the understandings of his readers by asserting, that *Tinea Favosa* is not of vegetable origin, and not contagious, when scientific Europe knows it to be the one, and direct inoculation has proved it to be the other." [May 1848, p. 829.]

We hope that we do not "insult our readers," when we intimate our scepticism in the vegetable *origin* of Favus: and venture to quote the remarks of Dr. Burgess on this subject:—"Favus, like ringworm, is considered by recent microscopical observers, to be a disease of vegetable origin; again mistaking a secondary product for an element of disease. That the parasitic fungus is to be found at a certain period of the eruption, and may be distinctly seen through the microscope, there is not the slightest doubt,—vegetable products may be seen also in cheese, in a certain state of decomposition:—but that it is the *origin* of the disease, the source whence it springs, there is not the shadow of a proof. However, the vegetable theory furnishes too convenient a *fons malorum* for settling some of the most difficult and obscure points in general, as well as in cutaneous pathology, to be readily laid aside, and will, therefore, no doubt, have its day." (p. 183.) Dr. Burgess' valuable work concludes with an excellent selection of forms of prescriptions, for diseases of the skin.